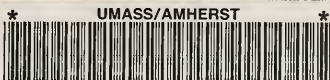


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EIGHTEENTH ANNUAL REPORT

OF THE

BOARD OF RAILROAD COMMISSIONERS.

JANUARY, 1887.

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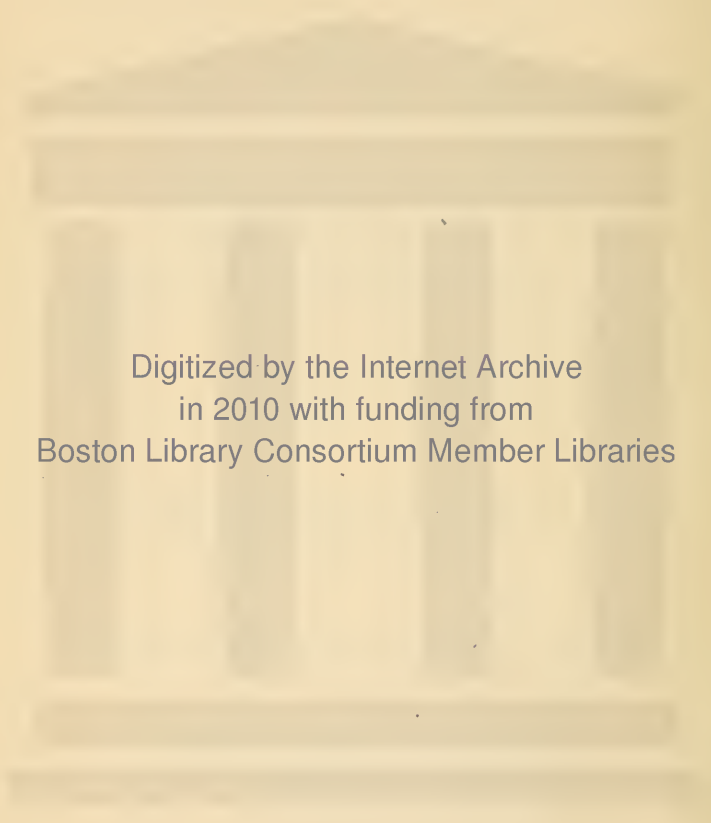
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# CONTENTS.

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	PAGE
INDEX TO REPORT, . . . . .	v
REPORT OF COMMISSIONERS, . . . . .	3
 APPENDIX :	
A. — Receipts of Grain in Boston for Ten Years, . . . . .	39
B. — Tabular Statements of Accidents in Massachusetts, . . . . .	44
Tabular Statements of Train Accidents in United States, . . . . .	50
C. — Special Reports on Accidents, . . . . .	61
D. — Grade Crossings, . . . . .	76
E. — Passenger and Freight Facilities and Rates, . . . . .	79
F. — New Stations and Re-location of Stations, . . . . .	95
G. — Exigency for New Roads, . . . . .	105
H. — Miscellaneous, . . . . .	112
I. — Report of Engineer on the Meigs Elevated Railway, . . . . .	125
J. — Letter relative to the Martin Anti-fire Car-Heater, . . . . .	135
K. — Circulars, . . . . .	137
L. — Expenses of Office, . . . . .	141
 TABULATED STATEMENT OF RAILWAY AND RAILROAD RETURNS :	
Contents of Tables, . . . . .	144
Abstract of Street Railway Returns, . . . . .	150
Comparative Statements from Street Railway Returns, . . . . .	168
Tabulated Statement from Railroad Returns, . . . . .	176
Comparative Statement from Railroad Returns, . . . . .	216
Summary from Returns of 1884 and 1885, . . . . .	222
Summary from Returns of 1873 and 1880-85, . . . . .	224





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# INDEX.

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- Abstract of street railway returns, 150-173 (*see contents of Tables*, p. 144).  
    railroad returns, 176-225 (*Tabulated alphabetically, see contents*, 146).  
Accidents, statistics of, in Massachusetts, 17-21, 44-53.  
    in United States, 21, 54-60.  
    to passengers during the year, 17.  
    to employees, 17, 18, 53.  
    at highway crossings, 17, 18.  
    to trespassers, 17, 18.  
    comparative number of, on different roads, 19, 20.  
    ratio of, to number of passengers carried, 20, 21.  
    tabular statement of, for year, 44-49.  
        for ten years, 51-53.  
    special reports on, 61-75.  
train, classification of, 50, 54.  
    on the Troy & Greenfield Railroad near Bardwell's Ferry, 17, 64.  
    on Old Colony R. R. at Assonet, 61.  
    on Boston & Albany R. R. at Pittsfield, 73.  
    on Boston & Lowell R. R. at North Woburn Junction, 62.  
        at Winchester, 75.  
    on Central Mass. R. R. at Oakdale, 91.  
    on Worcester, Nashua & Rochester R. R. at Pepperell, 70.  
    on street railways, 16.  
Alexander, E. L., and others, *v.* Boston & Maine R. R., 82.  
Amherst, selectmen of, *v.* New London Northern R. R. Co., 91.  
Annual returns of railroads, tabulated statement compiled from, 176-219.  
    tabulated comparative results compiled from, 216-220.  
    of street railways, abstracts of, 150-173.  
Anti-fire car-heater, 30, 31, 135.  
Ashburnham Railroad consolidated with the Fitchburg, 4.  
Assets and liabilities of railroads, 222 (*see Abstract of returns of the several roads*).  
    of street railways (*see Abstract of street railway returns*).  
Attleborough, petition for a grade crossing in, 77.  
Automatic couplers (*see Couplers*).  
Baltimore & Ohio Railroad Co., Relief and Pension Fund for employees of, 25.  
Baggage cars, number of, 15, 223.  
    cost of repairs of, per train mile, 218.  
Bel Air Manufacturing Co. *v.* Boston & Albany R. R. Co., 79.  
Blaikie, John S., and others, *v.* New York & New England R. R. Co., 87.  
Board of Railroad Commissioners, great number of matters acted on without formal  
    hearings, 36.  
    members of, 141.  
Boston, receipts of grain in, for ten years, 39-43.

- Boston & Albany Railroad, ratio of passengers injured to total number carried, 19.  
     ratio of employees injured to total number, 20.  
     cars on, heated by steam from locomotive, 31, 135.  
     complaint against, for annoyances between Ferdinand and Berkeley streets, Boston, 119.  
     petition for reduction of fares on, between Westborough and Southville, 93.  
     reduction of coal rates from North Adams to Pittsfield, 79.  
     better access to station of, at Palmer, 118.  
     relocation of Cypress Street station, 97.  
     accident on, 73.
- Boston, Barre & Gardner R. R. consolidated with Fitchburg, 4.
- Boston & Lowell Railroad, ratio of passengers injured to total number on, 19.  
     employees injured to total number, 20.  
     petition for certificate of exigency for branch in Salem, 105.  
     prohibition of whistling of locomotives on, in Arlington, 117.  
     ratio of passengers injured to whole number, 19.
- Boston & Maine Railroad, ratio of employees injured to total number, 20  
     accident at grade crossing of, in Wakefield, 70.  
     complaint of citizens of Malden against, 82.  
     report relative to Oak Grove Station on, 116.  
     complaint of Marks and others against, 123.
- Boston & Providence Railroad, comparative exemption of, from accidents, 18, 19.  
     ratio of passengers injured to total number, 19.  
     employees injured to total number, 20.
- Box cars, guard rail on, no demand for, 33.
- Brakes, power, on freight cars, 32.
- Brookline, petition of B. & A. R. R. Co. for relocation of Cypress Street station in, 97.
- Bridges, cost of repairs of, per train mile, 11, 218.
- Business, volume of, on railroads, 9, 10.
- Capital (*see Stock*).
- Cars owned by railroads, 15, 223.  
     by street railways, 16, 164.  
     cost of repairs of, per train mile, 11, 218.  
     per car, 219.
- Cash assets, increase of, 4.
- Circulars issued by the Board, 137.
- Coal transportation, rates for, on Boston & Albany Railroad from North Adams to Pittsfield, 79.
- Collision on Boston & Lowell R. R., 62.  
     on Worcester, Nashua & Rochester R. R., 70.  
     on Boston & Albany R. R., 73.
- Comparison of statistics of 1873 to 1886, 224.
- Complaints, petitions, etc., reports on, 76-124.
- Connecticut River Railroad, experiment in applying steam heat to cars of, 31.
- Construction of railroads during year, 3.  
     cost of, per mile owned, 4, 216.
- Contents of tables compiled from railroad returns, 144.
- Cost of railroads, 4.  
     per mile owned, 216.  
     of street railways, 16, 152.  
     per mile owned, 168.  
     of operating, 7, 8.  
     of running trains on leading roads of Mass., 10, 11.
- Couplers, automatic, prescribed by Board, number in use, 28, 29.  
     approval of another, 28.

- Couplers, automatic, only one accident reported by use of, 29.
  - acts for compulsory use of, void as to inter-state commerce, 29.
  - congressional action relative to, may be expedient, 29.
- Coupling or uncoupling cars, accidents from, 18.
- Cox, Emily B., report on death of, 73.
- Crossings, highway, at grade, number of, in the State, 21.
  - accidents at, 17, 18.
  - assent of Board for new, 21.
  - number abolished on the Old Colony R. R., 21.
  - petitions for, 76.
  - (*See Grade-crossings.*)
- Debt of railroads in Massachusetts, 4, 5, 222.
  - comparative statement of, for seven years, 5.
  - per mile owned, 216.
  - of street railways, 16, 50.
    - per mile of track, 168.
- Deficit or surplus of railroad companies (*see Returns of the several roads*).
  - street railway companies (*see Returns of street railways*).
- Derailment, accidents by, 50.
- Dividends of railroads, 9 (*see Abstract of returns*).
  - statistics of, 223 (*see Abstract of returns*).
  - amounts paid during ten years, 9.
  - of street railways, 16, 162.
- Double track, miles of, 3, 176-183.
- Earnings of railroads, 6, 7, 220.
  - per mile of road, 7, 217.
  - per train mile on leading roads in Mass., 12, 217, 218.
  - of street railways, 16, 156.
- Eastern Railroad, bridge of, over Rowley River to be rebuilt without draw, 35.
  - petition for certificate of exigency for branch in Salem, 105.
- Employees, number of, on railroads, 15.
  - on street railways, 16.
  - injuries to, statistics of, 17, 18, 53.
  - weekly payment of, 22.
- Equipment of railroads, 15, 223.
  - additions to, etc., 15.
  - cost of, 4, 222.
  - per mile of road owned, 216.
  - street railways, 16, 164.
    - cost of, 152, 154.
    - per mile of track operated, 168.
- Exigency for new roads, reports on, 105-111.
- Expenses, statistics of railroad, 5 (*see Abstract of returns*).
  - per train mile, 10, 11, 217, 218.
  - per mile of road operated, 217.
  - per cent. of, to earnings, 220.
  - of street railways, 16, 158 (*see Abstract of returns of street railways*).
    - per mile operated, etc., 170, 172.
  - of office of commission, 141.
- Falmouth, petition for grade crossing in, 76.
- Fares, average, on leading roads in Mass., 13.
  - on street railways, 16.
- Fire in cars in case of accident, protection against, 29-31.
- Fitchburg Railroad, ratio of passengers injured to total number, 19.
  - ratio of employees injured to total number, 20.
  - award to, under contract for operating State road, 36.
- Foot guards in frogs or other angles, 22, 23.

- Forest Avenue Station on N. Y. & N. E. R. R., report and action of Board relative to, 101-104.
- Freight, tons of, carried on railroads, 10, 223.  
average rates of, on leading roads in Mass., 14.  
in 1865 and 1886, 14.  
average distance carried, 10, 219.  
tons of, carried per train mile, 219.
- Freight cars, number of, 15, 225.  
power brakes on, 32.  
cost of repairs of, per train mile, 11, 218.  
per car, 219.
- Freight couplers and draw-bars, action of the Board concerning, 28, 29.
- Freight earnings, 6, 232.  
per train mile, 12, 217.  
expenses per train mile, 217.
- Freight mileage, statistics of, 7, 223, 225.
- Freight trains, miles run by, 10, 223.
- Freights, average, on railroads, 14.  
receipts from, 6.
- Frogs and guard rails required to be blocked, 22, 23.
- Fuel, cost of, per train mile, 11, 218.
- Grade-crossings of railroads and highways, number of, 21.  
accidents at, 17, 18, 48, 52.  
reports on petitions for, 76.  
number of, 222.
- Grain, receipts of, in Boston for ten years, 39-43.
- Guard rails and frogs to be blocked, 22, 23.
- Hanover Branch R. R. Co., selectmen of Hanover petitioners for further accommodations on, 90.
- Highway crossings (*see Crossings*).
- Horses owned by street railroad companies, 16, 164.  
renewal of, 158.  
per mile operated, 168.
- Housatonic Railroad, suits relative to freight rates on, 33.
- Income of railroads, 5, 8.  
for ten years, 6.  
per mile operated, 217.  
per train mile, 12.  
net, 8, 223.  
per mile of road operated, 217.  
percentage of, to permanent investment, 8.
- Income of street railways, 16, 156, 162.  
per mile operated, 170, 172.
- Increase of earnings, 5.
- Interest, accrued, statistics of (*see Abstract of returns*).
- Inter-state railroad traffic, not to be controlled by State laws, 34.
- Investments, permanent, of railroads, statistics of (*see Abstract of returns*).  
cost of, per mile of road owned, 216.
- Legislation, recent, 22-28.
- Locomotives, cost of repairs of, per train mile, 11, 218.  
per locomotive, 219.  
number of, 15.
- Mail and baggage cars, number of, 15, 223.  
cost of, per train mile, 218.
- Mails, receipts from, 223.
- Maintenance of way, etc., cost of, per train mile, 11.
- Marks, B. W., and others v. Boston & Maine Railroad, 123.



- Martin anti-fire car-heater, use of, 30, 31, 135.
- Massachusetts, accidents in, 17, 44.
- Meigs Elevated Railway, report on, 35, 125.
- Mileage, freight and passenger, 7, 223.
  - of railroads, 3, 176.
  - of street railways, 16, 164.
  - train, expenses, 10, 11.
- Miles run on railroads, statistics of, 10, 223.
  - average, travelled by passengers, 9, 219.
  - freight carried, 10, 219.
  - run on street railways, 16, 166.
- Milford & Woonsocket R. R., complaint of H. A. Whitney and others against, 85.
- Nahant, petition for certificate of exigency for railroad from Lynn to, 110.
- New London Northern R. R., petition for facilities on, at South Amherst, 91.
- New Haven & Northampton R. R., petition of selectmen of Whately for station on, 99.
- New railroad construction, 3.
- New York & New England Railroad, ratio of passengers injured to total number, 19.
  - petition for better station on, at Forest ave., 101.
  - ratio of employees injured to total number, 20.
  - complaint of citizens of Hyde Park, against, 87.
- Oil and waste, cost of, per train mile, 11, 218.
- Old Colony Railroad, no grade crossing accident reported by, 20.
  - apparent increase of grade crossings on, 21.
  - ratio of passengers injured to total number, 19.
  - ratio of employees injured to total number, 20.
  - petition for station on, at Pierce Street, Fall River, 95.
- Onset Bay Grove Railroad Association petition for a route, 115.
  - Association, complaint of selectmen of Wareham against, 112.
- Operating expenses, what is included in, 11.
  - percentage of, to gross receipts, 8.
  - to transportation earnings, 220.
- Operation of railroads, cost of, per mile, 8.
  - per train mile, 10, 218.
  - items composing, 11.
  - comparative average cost of, for ten years, 8.
- Paine, John H., and others *v.* N. Y. & N. E. R. R. Co., 101.
- Palmer, petition for better access to station at, 118.
- Passenger cars, cost of repairs of, per train mile, 11, 218.
  - number of, 15.
  - heating of, by steam from the locomotive, 30, 31.
  - expense of repairs per car, 219.
- Passenger earnings, 5, 6.
  - per train mile, 12.
  - average on principal railroads, 12.
  - fares, statistics of, 13.
  - mileage, statistics of, 7, 9, 220, 223.
- Passenger and freight facilities, reports on, 79, 94.
- Passenger trains, miles run by, 10, 223.
- Passengers, number carried on railroads, 9 (*see Returns of respective roads*).
  - one mile, 9.
  - per train mile, 219.
  - on street railways, 16, 166.
  - per round trip, 166.
  - average distance travelled by, 9, 219.
  - accidents to, 17, 19.
- Paine and others *v.* New York & New England R. R., 101.
- Permanent investments of railroads, 5.

- Permanent investments of railroads, percentage of gross and net income to, 8.  
     per mile of road owned, 216.  
     of street railways, 15, 16, 152.  
     way (*see Way*).
- Personal injuries, amount of damages paid for (*see Returns of the several roads*).
- Petitions, applications, etc., made to the Board, reports on, 96-147.
- Power brakes on freight trains, 32.
- Protection against fire in case of accident, 29-31.
- Providence & Worcester Railroad, complaint of mayor and aldermen of Worcester against, 121.
- Purchasers of railroads, rights and duties of, defined, 27.
- Railroad Commissioners, names of, 141.
- Railroad construction, 3.
- Railroad corporations, number of, 4.  
     authorized to join with employees in relief societies, 23, 24.
- Railroad returns, tabulated statement compiled from, 176, 225.
- Railroads of Massachusetts, construction of, during the year, 3.  
     statistics of, 4-15, 176-225.  
     number of, 4.  
     length of, 3, 176-183.  
     miles operated, 222.  
     capital stock of, 4, 5, 222.  
         per mile owned, 216.  
     debt of, 4, 5, 222.  
         per mile owned, 216.  
     cost of, 4.  
         per mile owned, 216.  
     expenses of, 5, 219.  
     earnings of, 5, 6, 7, 12.  
         comparative, for ten years, 6.  
         for seven years, 224.  
     permanent investments of, 5, 222.  
         per mile owned, 216.  
     dividends of, 9.  
     cost of operating, 7, 8.  
         per train mile, 10, 11.  
     income of, 5, 8.  
     amount of business of, 9.  
     average fares on, 13.  
     average freights on, 14.  
     equipment of, 15, 223.  
     other property of, 222.  
     grade crossings of, 17.  
     employees on, 15.  
     weekly payment of, 22.  
     accidents on, 17-21, 44-49.  
     double track, etc., on, 176 (*see Abstract returns of the several roads*).  
     total assets and liabilities of, 222.  
     rights and duties of purchasers of, 27.
- Rails, cost of renewal of, per train mile, 11, 218.  
     steel, miles of, 14, 222.  
     iron, miles of, 222.
- Railways (*see Street railways*).
- Relief societies, co-operation of railroad companies and employees for formation of,  
     authorized, 23-27.  
     no company has yet co-operated with its employees in such society, 24.

- Relief societies, advantages of co-operation for, 25, 26.  
     plan of, on Baltimore & Ohio R. R., 25.
- Repairs of railroads, cost of, per train mile, 11, 218.  
     of cars, average cost of, per car, 219.  
     on street railways, 158.  
         per mile operated, 168.  
     cost of, per locomotive, passenger and freight cars, 219.
- Reports on petitions, applications, etc., made to the Board, 76-124.
- Returns, railroad, in tabular form, arranged alphabetically (*see Contents of tables*, p. 147).  
     comparative tables compiled from, 216.  
     street railway, tabular abstract of, 150-173.
- Road (*see Way*).
- Road-bed, cost of repairs of, per train mile, 11.
- Robinson, George, and others *v.* Boston & Albany R. R. Co., 118.
- Rolling-stock, amount of, returned for seven years, 15.  
     statistics relating to 213 (*see Abstract of returns*).
- Rowley River, bridge of Eastern R. R. over, to be built without draw, 35.
- Safety appliances, 28-32.
- Safety valves to prevent escape of steam in case of accident, 32.
- Salaries and general office expenses of street railways, 158.
- Salaries, wages, etc., per train mile, 11 (*see Abstract of returns*).
- Season ticket passengers, number of, 223 (*see Returns of respective roads*).
- Service, train, cost of, 11.
- Sidings, statistics of, 176.
- Stations, petitions for new and relocation of, 95-104.
- Steel rails, miles of, 14, 222.  
     expenses for new (*see Returns of railroads respectively*).
- Stock of railroads, amount of, 4, 5.  
     per mile of road owned, 216.  
     how owned, 222.  
     dividends on, 9 (*see Abstract of returns*).
- of street railways, amount of, 16, 150.  
         per mile owned, 168.  
         dividends on, 16, 172.
- Street railway returns, 162-185.
- Street railways, statistics of, 15, 16, 150-173.  
     number of, 15.  
     capital stock of, per mile owned, 15, 168.  
     debt of, 16, 150.  
     debt per mile of road owned, 168.  
     land and buildings of, 152.  
     cash assets, 150.  
     length of, 16, 164.  
     number of stockholders, \$150.  
     cost of, 16, 152.  
         per mile owned, 16, 168.  
         per mile operated, 168.  
     total property and assets, 152.  
     additions and reductions of property during year, 154.  
     income of, 16, 156.  
         per mile operated, etc., 170, 172.  
     expense of operating, 16, 158, 160.  
         per mile operated, etc., 170, 172.  
     cost of round trip on, 16, 170.  
     interest accrued, 162.  
     net earnings per mile operated, etc., 172.

- Street railways, dividends of, 16, 162.  
     equipment of, 16, 164.  
     car mileage on, 16, 166.  
     number of passengers on, 16, 166.  
         greater than on steam roads, 16.  
         per round trip, 166.  
     number of trips on, 16, 166.  
         of employees on, 16, 166.  
     subject to actions of tort in cases of loss of life by negligence, 28.  
     may use cable system of motive power, 28.  
     consolidation of, in Boston, 28.  
     abstract of accidents on, 166.
- Summary of returns of 1885 and 1886, 222, 223.  
     for seven years, 224, 225.
- Surplus or deficit of railroad companies (*see Abstract of returns*).
- Tables, statistical, from railroad returns, 176-220.  
     from street railway returns, 150-173.
- Taxes (*see Abstract of returns*).
- Track of railroads, length of, 3, 4, 176-213.  
     cost of repairs of, per train mile, 11.
- Traffic expenses, statistics of, 10, 11, 223.  
     per train mile, 10.
- Train accidents, 17, 50, 54-60.
- Train mile, expenses per, 11.  
     earnings per, 12.  
     earnings and expenses per, statistics of, 217, 218.  
     standard, average, cost of, 10, 11.
- Train mileage, 10.  
     statistics of, 223 (*see Abstract of returns*).
- Trains, cost of running, 10.
- Transportation earnings and expenses, statistics of, 217, 220, 223.
- Trespassers, accidents to, 17.
- Troy & Greenfield Railroad, award under the contract for operating, 36.
- Union Station on north side of Boston, authorized, 27.
- United States, statistics of railroad accidents in, 21.
- Wages (*see Salaries*).
- Ware, William H., and others *v.* Boston & Albany R. R. Co., 119.
- Wareham, selectmen of, *v.* Onset Bay Grove Association, 112.
- Waste, cost of, per train mile, 11, 230.
- Way, permanent cost of maintaining, per train mile, 11, 218.  
     of street railways, cost of, 16, 152.  
         repairs on, cost per mile operated, 168.
- Westborough, selectmen of, *v.* Boston & Albany R. R. Co., 93.
- Whately, petition of selectmen of, for station on the New Haven and Northampton R. R., 99.
- Whistling of locomotives as crossing signal, prohibited at crossings in Arlington, 117.
- Whitney, H. A., and others *v.* Milford & Woonsocket R. R. Co., 85.
- Winchendon, complaint of improper use of grade crossing in, 78.
- Worcester, mayor and aldermen of, *v.* Boston & Albany and other railroad companies, 121.

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**Part I.**

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**COMMISSIONERS' REPORT.**

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# Commonwealth of Massachusetts.

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The Railroad Commissioners respectfully submit their Eighteenth Annual Report.

## RAILROAD CONSTRUCTION.

During the year ending Sept. 30, 1886, there were constructed the following additional miles of railroad in this State : —

Boston & Albany (Riverside Branch), . . . . .	3.000
Boston & Lowell (Woburn Branch Ex.), . . . . .	4.200
Fitchburg (Watertown Branch Ex.), . . . . .	1.660
	<hr/>
	8.860
And there was a decrease in the number of miles by a re-measure- ment on several roads of . . . . .	1.040
	<hr/>
Additional miles, . . . . .	7.820

## MILEAGE OF RAILROADS.

The total length of railroads belonging to the corporations making returns to this Board was 2,867.613 miles of main line and branches, of which 1,011.367 were provided with double track. Last year the total length was 2,859.793 miles, with 977.087 miles of double track; showing an increase of 7.820 of total length, and 34.280 miles of double track. The total length of sidings was 1,249.862 miles, as against 1,203.142; showing an increase of 46.720 miles. The total length of track, considering double track and sidings as so much additional single track, is 5,128.842 miles, as against 5,040.022 of last year; the increase being 88.820 miles. Of the whole amount there are in this State, of main line 1,989.508 miles, of double track 733.919, and of sidings 892.676 miles, being a total of 3,616.103, as against 3,536.627 miles of last year; showing an increase of track in this State of 79.476 miles.

## COST OF ROADS.

The average cost of standard-gauge roads is returned at \$62,540.41 per mile; the cost of equipment per mile operated averages \$5,947.33, — making the average cost of a standard-gauge road, with equipment, \$68,487.74. The cost of narrow-gauge roads averages \$31,030.80 per mile, and \$5,847.57 per mile additional for equipment.

## NUMBER OF CORPORATIONS.

Returns were received from sixty corporations, — three less than last year. The Ashburnham and the Boston, Barre & Gardner having been consolidated with the Fitchburg, and the Lowell & Framingham with the Old Colony Railroad Company.

## CAPITAL STOCK AND DEBT.

The aggregate capital stock was \$130,687,969.02, an increase of \$2,136,310.48, resulting from an increase of the capital stock of the following roads: —

New York & New England, . . . . .	\$1,900,000
Boston & Lowell, . . . . .	587,700
Old Colony, . . . . .	327,905
Boston, Revere Beach & Lynn, . . . . .	14,200
Boston, Winthrop & Shore, . . . . .	3,000
Central Massachusetts, . . . . .	1,380
Fitchburg, . . . . .	100

The Boston & Maine charged \$78,725.48 to capital stock account, in order that the account should show the capital outstanding.

The capital stock of the Lowell & Framingham, amounting to \$746,700, and of the Ashburnham, amounting to \$30,000, disappear from our accounts (under these names): the Lowell & Framingham having been consolidated with the Old Colony, and the Ashburnham with the Fitchburg.

The net debt of the companies — the gross debt less cash assets — amounts to \$71,012,497.49, a decrease of \$2,694,124.55. The cash assets of all the railroad companies of the State have increased by the amount of \$2,384,611.64. The returns for the last seven years are as follows: —

YEARS.	Stock.	Net Debt.
1880, . . . . .	\$118,738,871 58	\$59,172,520 25
1881, . . . . .	122,155,614 12	64,850,890 76
1882, . . . . .	122,976,262 26	71,913,806 00
1883, . . . . .	122,367,572 27	72,933,290 93
1884, . . . . .	127,668,390 27	74,439,473 75
1885, . . . . .	128,551,658 54	73,706,622 04
1886, . . . . .	130,687,969 02	71,012,497 49

## GROSS INCOME.

The total gross income of these corporations for the year is \$49,315,820.50, an increase of \$4,692,470.15, being an increase of 10.5 per cent.

The following table gives a comparison for seven years : —

YEARS.	Gross Income.	Increase from Previous Year.	Per cent. of Increase.
1880, . . . . .	\$35,140,374 77		
1881, . . . . .	37,764,395 83	2,624,021 06	7.5
1882, . . . . .	40,846,370 10	3,081,974 27	8.1
1883, . . . . .	43,380,387 63	2,534,017 53	6.2
1884, . . . . .	43,119,302 70	261,084 93*	0.6*
1885, . . . . .	44,623,350 35	1,504,047 65	3.5
1886, . . . . .	49,315,820 50	4,692,470 15	10.5

The total expenses—including rents paid—of all the corporations amounted to \$35,887,239.18, an increase of \$3,382,863.71. The net income was \$13,428,581.32, being an increase of \$1,309,606.44. The passenger earnings were \$23,331,325.71, an increase of \$1,781,956.44 over the year 1885, when they amounted to \$21,549,369.27. The freight earnings were \$22,840,363.53, an increase of \$2,647,391.81 over those of last year, which amounted to \$20,192,971.72.

The local passenger earnings were \$15,773,723.12, an increase of \$1,318,865.73 over the figures of last year, which were \$14,454,857.39. The through passenger earnings were \$5,401,602.23, an increase of \$322,635.52 over the amount for last year, which was \$5,078,966.71. The express, mail, and other

\* Decrease.

earnings included in total passenger earnings, as given above, amounted to \$2,156,000.36, being an increase of \$140,455.19, this item having been, in 1885, \$2,015,545.17. The local freight earnings were \$10,929,413.10; in 1885 they were \$9,931,155.95, showing an increase of \$998,257.15. Through freight was \$11,852,778.57, against \$10,192,899.01, an increase of \$1,659,879.56.

The income from all other sources of the freight department amounted to \$58,171.86, as against \$68,916.76, a decrease of \$10,744.90. The following table gives the earnings in strictly railroad business during the past ten years :—

YEARS.	Total Transportation.	Increase or Decrease from Previous Year.	Percentage.
1876-77, . . . .	\$28,931,987 62	—	—
1877-78, . . . .	28,003,236 41	\$928,751 21*	3.21*
1878-79, . . . .	29,152,829 02	1,149,592 61	4.10
1879-80, . . . .	33,661,822 69	4,508,993 67	15.40
1880-81, . . . .	35,936,302 87	2,274,480 18	6.75
1881-82, . . . .	39,094,369 25	3,158,066 38	8.79
1882-83, . . . .	41,635,800 39	2,541,431 14	6.50
1883-84, . . . .	41,456,977 30	178,823 09*	0.43*
1884-85, . . . .	41,742,340 99	285,363 69	0.69
1885-86, . . . .	46,171,689 24	4,429,348 25	10.61

The following tables show the passenger and freight earnings for the past ten years, and the comparative amount of passenger and freight mileage during the same period :—

YEARS.	Passenger Earnings.	Freight Earnings.
1876-77, . . . . .	\$13,489,208 95	\$14,234,677 72
1877-78, . . . . .	12,949,970 76	13,782,724 66
1878-79, . . . . .	13,035,047 44	14,813,337 69
1879-80, . . . . .	14,532,368 06	17,741,746 39
1880-81, . . . . .	17,328,495 48	18,607,807 39
1881-82, . . . . .	19,567,274 71	19,527,094 54
1882-83, . . . . .	20,602,289 13	21,033,511 26
1883-84, . . . . .	21,207,200 42	20,249,776 88
1884-85, . . . . .	21,549,369 27	20,192,971 72
1885-86, . . . . .	23,331,325 71	22,840,363 53

\* Decrease.



*Passenger and Freight Mileage.*

YEARS.	Total Passenger Mileage.	Total Freight Mileage.
1876-77, . . . . .	605,544,855	684,810,604
1877-78, . . . . .	593,060,781	715,480,187
1878-79, . . . . .	616,871,131	806,064,933
1879-80, . . . . .	708,645,422	959,429,750
1880-81, . . . . .	788,422,761	1,080,802,796
1881-82, . . . . .	892,321,207	1,130,070,652
1882-83, . . . . .	943,245,658	1,220,824,418
1883-84, . . . . .	1,007,136,376	1,229,368,472
1884-85, . . . . .	1,041,628,073	1,266,160,455
1885-86, . . . . .	1,124,148,045	1,391,626,438

The increase of passenger mileage — or passengers carried one mile — for the year amounts to 82,519,972. The increase of freight mileage, or tons of freight carried one mile, amounts to 125,465,983. The total number of passengers carried was 75,842,581, showing an increase of 6,238,881 over the previous year. The whole number of tons of freight carried was 22,925,532, as against 20,577,096; showing an increase of 2,348,436 tons.

**EARNINGS PER MILE OF ROAD.**

The average sum earned on each mile of main track and branch operated was \$12,221.20; or, computing double track as additional single track, the average per mile was \$9,639.19. The average transportation earnings per mile, on the seven roads of standard gauge terminating in Boston, was \$11,604.68, being an increase of \$840.77 per mile.

**COST OF OPERATING.**

The following table shows the cost of operating the roads during the past ten years, and the percentage of operating expenses, not including taxes, as compared with gross receipts: —

YEARS.	Cost of Operating per Mile of Road.	Percentage of Operating Expenses to Gross Receipts.
1876-77, . . . . .	\$3,494 18	68
1877-78, . . . . .	7,319 51	69
1878-79, . . . . .	6,576 75	65
1879-80, . . . . .	7,786 00	68
1880-81, . . . . .	8,146 15	68
1881-82, . . . . .	8,603 10	69
1882-83, . . . . .	9,192 56	71
1883-84, . . . . .	8,062 12	66
1884-85, . . . . .	7,460 50	62
1885-86, . . . . .	8,147 84	63

## GROSS AND NET INCOME.

The total gross and net income of all the corporations for ten years, and the percentage of gross and net income compared with the permanent investments, were as follows :—

YEARS.	Total Gross Income.	Percentage to Permanent Investments.	Net Income.*	Percentage to Permanent Investments.
1876-77, .	\$30,008,513 74	17.7	\$9,344,088 38	5.5
1877-78, .	29,053,008 76	17.0	9,232,811 98	5.4
1878-79, .	30,312,964 54	17.5	10,154,013 86	5.8
1879-80, .	35,140,374 77	19.5	11,191,815 53	6.2
1880-81, .	37,764,395 83	19.9	10,701,751 60	5.6
1881-82, .	40,846,370 10	20.5	19,902,202 95	5.5
1882-83, .	43,380,387 63	21.8	10,900,479 92	5.4
1883-84, .	43,119,302 70	20.4	11,048,618 19	5.2
1884-85, .	44,623,350 35	20.8	12,118,974 88	5.7
1885-86, .	49,315,820 50	23.0	13,428,581 32	6.3

The net income of 1885-86 was earned by the several corporations in the following proportions as compared with their permanent investments :—

12 companies	with	\$9,205,000	permanent investment	had no net income.
9	"	39,551,000	"	" " 3½ per ct. or less.
13	"	14,729,000	"	" " 3½ to 5½ per cent.
9	"	54,156,000	"	" " 5½ to 7½ "
10	"	57,702,000	"	" " 7½ to 9½ "
4	"	38,911,000	"	" " over 9½ per cent.
57 companies†	"	\$214,254,000	"	" " net income‡ of 7.9 per cent.

\* Gross income less total expenses and rents.

† Troy and Greenfield not included.

‡ Rents not deducted.

## DIVIDENDS.

The total amount of dividends paid was \$6,857,506.30, an increase of \$305,802.15 over last year. Of the 60 corporations, 34 paid dividends varying from 2 to 10 per cent. The following table shows the amount paid in dividends by all the corporations for ten years, with the percentage to capital stock, and also the amount of interest paid : —

YEARS.	Amount Paid in Dividends.	Percentage to Total Capital Stock.	Interest Paid.
1876-77, . . . .	\$5,429,183 31	4 60	\$3,437,026 53
1877-78, . . . .	5,589,927 40	4.68	3,126,925 34
1878-79, . . . .	5,264,431 78	4.30	3,172,990 59
1879-80, . . . .	5,987,718 64	5.05	3,423,752 25
1880-81, . . . .	6,287,866 82	5.15	3,748,292 55
1881-82, . . . .	6,271,139 86	5.10	4,291,222 59
1882-83, . . . .	6,379,721 10	5.21	4,756,085 23
1883-84, . . . .	6,535,054 92	5.12	4,729,328 56
1884-85, . . . .	6,551,704 15	5.10	4,767,095 88
1885-86, . . . .	6,857,506 30	5.33	4,810,019 68

## AMOUNT OF BUSINESS.

The annual passenger and freight movement on all the roads, for ten years, appears in the following tables : —

YEARS.	No. of Passengers Carried.	No. of Passengers Carried One Mile.	Average Distance Travelled.
1876-77, . . . .	38,450,823	605,544,855	16.00
1877-78, . . . .	37,318,427	593,060,781	15.85
1878-79, . . . .	39,217,634	616,871,131	15.73
1879-80, . . . .	45,151,152	708,645,422	15.70
1880-81, . . . .	49,834,491	788,422,761	15.82
1881-82, . . . .	55,868,694	892,321,207	15.97
1882-83, . . . .	61,530,747	943,245,658	15.33
1883-84, . . . .	66,517,265	1,007,136,376	15.29
1884-85, . . . .	69,603,700	1,041,628,073	14.97
1885-86, . . . .	75,842,581	1,124,148,085	14.82

YEARS.	Tons Freight Carried.	Tons Freight Carried One Mile.	Average Distance each Ton was Carried.
1876-77, . . . .	11,910,663	684,810,604	57.40
1877-78, . . . .	12,186,545	715,480,187	58.65
1878-79, . . . .	14,401,877	806,064,933	56.00
1879-80, . . . .	17,221,567	959,429,750	55.70
1880-81, . . . .	17,971,072	1,080,802,796	60.14
1881-82, . . . .	19,061,164	1,130,070,652	59.29
1882-83, . . . .	20,202,881	1,220,824,418	60.43
1883-84, . . . .	20,273,920	1,229,368,472	60.64
1884-85, . . . .	20,577,096	1,266,160,455	61.53
1885-86, . . . .	22,925,532	1,391,626,438	60.70

The miles run by passenger and freight trains, and the total miles run by all trains for the past ten years, were as follows : —

YEARS.	MILES RUN BY —		
	Passenger Trains.	Freight Trains.	All Trains.
1876-77, . . . .	10,479,546	9,967,200	20,811,041
1877-78, . . . .	10,301,893	9,266,252	21,438,329
1878-79, . . . .	10,792,629	8,974,993	22,755,910
1879-80, . . . .	11,350,716	9,809,975	24,975,392
1880-81, . . . .	12,413,290	10,398,539	27,205,783
1881-82, . . . .	13,636,169	10,598,126	29,052,800
1882-83, . . . .	14,244,658	11,382,154	31,150,823
1883-84, . . . .	15,157,425	11,282,338	32,304,333
1884-85, . . . .	16,212,988	11,722,667	34,168,999
1885-86, . . . .	17,268,159	12,303,808	36,441,043

### COST OF RUNNING TRAINS.

The average cost of running trains one mile during this year on all roads reported, has been \$0.845. The cost (not including taxes) of running each train mile for the past eight years was as follows : —

#### *Cost per Total Train Mile.*

1878-79, . . . .	\$0.845	1882-83, . . . .	\$0.949
1879-80, . . . .	.902	1883-84, . . . .	.895
1880-81, . . . .	.810	1884-85, . . . .	.813
1881-82, . . . .	.863	1885-86, . . . .	.845

The following table shows the cost, not including taxes, for five years per total train mile to each of the leading corporations of the State : —

	COST PER TOTAL TRAIN MILE.				
	1881-82.	1882-83.	1883-84.	1884-85.	1885-86.
Boston & Albany, . . .	\$0.920	\$1.003	\$0.927	\$0.819	\$0.933
Boston & Lowell, . . .	.867	.830	.781	.650	.680
Boston & Maine, . . .	.923	.964	.900	.805	.805
Boston & Providence, . .	1.268	1.275	1.220	1.158	1.216
Eastern, . . . . .	.867	.838	.818	—	—
Fitchburg, . . . . .	.890	.887	.800	.748	.753
New York & New England,	.850	.922	.932	.839	.834
Old Colony, . . . . .	1.005	1.008	.879	.863	.909
Connecticut River, . . .	1.019	.998	.936	.906	.967
New York, New Haven & Hartford, . . . . .	.983	.981	.968	.898	.937
Providence & Worcester, .	.988	1.026	1.072	.961	.994

The cost of certain specified items of train service per total train mile for the last six years is divided as follows : —

	1881.	1882.	1883.	1884.	1885.	1886.
Repairs of road-bed, . .	\$0.117	\$0.125	\$0.133	\$0.122	\$0.118	\$0.122
of bridges, . . . . .	.020	.017	.024	.024	.023	.025
of rails, . . . . .	.032	.028	.030	.021	.015	.015
of locomotives, . . .	.057	.061	.066	.060	.054	.056
of passenger cars, . .	.081	.096	.092	.039	.035	.039
of freight cars, . . .	.144	.141	.138	.043	.035	.047
Wages, . . . . .	.271	.279	.287	.283	.268	.272
Oil and waste, . . . .	.010	.011	.011	.010	.008	.007
Fuel, . . . . .	.122	.121	.124	.111	.094	.091
Totals, . . . . .	\$0.854	\$0.879	\$0.905	\$0.713	\$0.650	\$0.674

The earnings for each revenue-train mile, for each passenger-train mile, and for each freight-train mile, on eleven of the principal roads in the State during the past five years, are given in the following tables : —



	EARNINGS PER TOTAL REVENUE-TRAIN MILE.				
	1881-82.	1882-83.	1883-84.	1884-85.	1885-86.
Boston & Albany, . . .	\$1.496	\$1.638	\$1.542	\$1.406	\$1.596
Boston & Lowell, . . .	1.655	1.674	1.451	1.199	1.139
Boston & Maine, . . .	1.697	1.709	1.587	1.541	1.580
Boston & Providence, . .	1.860	1.838	1.749	1.715	1.763
Eastern, . . . . .	1.637	1.648	1.580	-	-
Fitchburg, . . . . .	1.451	1.532	1.394	1.324	1.337
New York & New England,	1.485	1.320	1.360	1.466	1.638
Old Colony, . . . . .	1.697	1.668	1.685	1.723	1.727
Connecticut River, . . .	1.821	1.855	2.080	1.691	1.828
New York, New Haven & Hartford, . . . . .	1.878	1.804	1.772	1.767	1.886
Providence & Worcester, .	1.977	2.013	1.832	1.962	2.110

	EARNINGS PER PASSENGER-TRAIN MILE.				
	1881-82.	1882-83.	1883-84.	1884-85.	1885-86.
Boston & Albany, . . .	\$1.863	\$1.990	\$1.824	\$1.733	1.783
Boston & Lowell, . . .	.947	1.047	1.071	.954	.888
Boston & Maine, . . .	1.508	1.513	1.402	1.373	1.402
Boston & Providence, . .	1.501	1.563	1.499	1.471	1.527
Eastern, . . . . .	1.469	1.458	1.420	-	-
Fitchburg, . . . . .	1.087	1.132	1.011	.965	.924
New York & New England,	1.050	.988	1.018	1.074	1.161
Old Colony, . . . . .	1.517	1.477	1.444	1.415	1.398
Connecticut River, . . .	1.290	1.253	1.593	1.112	1.239
New York, New Haven & Hartford, . . . . .	1.970	1.821	1.835	1.726	1.815
Providence & Worcester, .	1.454	1.555	1.221	1.560	1.591

	EARNINGS PER FREIGHT-TRAIN MILE.				
	1881-82.	1882-83.	1883-84.	1884-85.	1885-86.
Boston & Albany, . . .	\$1.283	\$1.433	\$1.359	\$1.199	\$1.465
Boston & Lowell, . . .	3.874	3.547	2.266	1.519	1.469
Boston & Maine, . . .	2.112	2.145	2.029	1.904	1.944
Boston & Providence, . .	2.501	2.579	2.498	2.451	2.450
Eastern, . . . . .	1.940	1.998	1.880	-	-
Fitchburg, . . . . .	1.807	1.892	1.768	1.728	1.792
New York & New England,	2.095	1.652	1.729	1.966	2.216
Old Colony, . . . . .	1.999	1.997	2.177	2.450	2.562
Connecticut River, . . .	2.788	3.066	2.639	3.060	3.167
New York, New Haven & Hartford, . . . . .	1.730	1.775	1.670	1.844	2.014
Providence & Worcester, .	2.559	2.513	3.205	2.426	2.734

## FARES AND FREIGHTS.

The four following tables show the average fares on all roads, the average fares and freights for eight years on the leading roads, and the change in average rate of freight on six roads since 1865 : —

*Average Fare on all Roads in the State.*

1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.	1884-85.	1885-86.
\$0.0212	\$0.0224	\$0.0220	\$0.0200	\$0.0201	\$0.0192	\$0.0187	\$0.0188

*Average Fares for Six Years.*

	FARES.					
	1880-81.	1881-82.	1882-83.	1883-84.	1884-85.	1885-86.
	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.
Boston & Albany, . .	1.97	1.99	2 08	1.91	1.84	1.85
Boston & Maine, . .	1.99	1.95	1.97	1.90	1.74	1.80
Boston & Providence, .	1.95	1.96	1.88	1.88	1.84	1.87
Old Colony, . . .	2.14	2.00	2.00	1.87	1.70	1.70
Boston & Lowell, . .	1.88	1.67	1.94	2.12	2.04	2.06
Fitchburg, . . .	1.82	1.71	1.77	1.65	1 83	1.75
Eastern, . . . .	1.93	1.88	1 82	1.72	—	—
New York & New England,	2 25	2 09	2.06	2.01	1.93	2.02
Connecticut River, . .	2.53	2.48	2.36	2.37	2.34	2.42
New York, New Haven &						
Hartford, . . . .	1.80	1.81	1.98	1.96	1 94	1.92
Providence & Worcester,	2 24	2.12	2.14	2.12	2.08	2.10

*Average Freights for Six Years.*

	FREIGHTS.					
	1881.	1882.	1883.	1884.	1885.	1886.
	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.
Boston & Albany, . . . .	1.04	1.07	1.20	1.09	0 94	1.10
Boston & Maine, . . . .	2.43	2 35	2.24	2.34	2.13	2 27
Boston & Providence, . . .	2.77	2.83	2.83	2.82	2.83	2.84
Old Colony, . . . . .	2.99	3.04	3.16	3.00	2.90	2.93
Boston & Lowell, . . . .	3.13	2.60	2.98	2.33	1.77	1.67
Fitchburg, . . . . .	1.26	1 18	1.19	1.09	1.06	1.07
Eastern, . . . . .	2.06	2.03	1.92	1.81	—	—
New York & New England, .	2.20	1 77	1.38	1.41	1.71	1.67
Connecticut River, . . . .	2.99	3.07	3.04	3.05	2.96	2.81
New York, New Haven & Hart- ford, . . . . .	1.79	1.98	1.89	1 96	1.96	2.00
Providence & Worcester, . .	2.80	2 78	2.96	3.09	2.45	2.49

*Average Rates of Freight, 1865 and 1886.*

	Rate 1865. Cents.	Rate 1886. Cents.	Per cent. of 1865 to 1886.
Boston & Albany, . . . . .	3 90	1 10	28
Boston & Maine, . . . . .	4.58	2 27	49
Boston & Providence, . . . .	4 38	2.84	65
Connecticut River, . . . . .	6.20	2.81	45
Fitchburg, . . . . .	4.10	1.07	26
Old Colony, . . . . .	3.20	2.93	92

## STEEL RAILS.

During the year, 237.434 miles of steel rail were laid as against 214.756 laid last year, making the whole amount now laid 3,573.910 miles; being nearly 93 per cent. of the total of main line, including double track and branches. The amount of steel rail laid each year for six years is shown in the following table: —

	1880-81.	1881-82.	1882-83.	1883-84.	1884-85.	1885-86.
Steel rail (miles), .	154	331	308	347	215	237



## ROLLING STOCK.

The increase in the number of locomotives during the year has been 29, and of passenger cars, 65; mail and baggage cars have increased 9; freight and miscellaneous cars have increased 1,362.

The following table shows the amount of rolling stock returned for the last seven years : —

	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.	1884-85.	1885-86.
Locomotives, .	1,103	1,161	1,222	1,286	1,391	1,416	1,445
Passenger cars, .	1,512	1,568	1,658	1,790	1,948	1,993	2,058
Mail and baggage cars, .	403	432	463	482	525	509	518
Freight cars, .	21,986	24,502	26,382	28,008	29,701	29,957	31,319

## EMPLOYEES.

The average number of persons employed by the railroad corporations was 31,188, being 1,119 more than in the year before. The following table shows the number employed for each of the past eight years : —

1878-79, . . .	19,453	1882-83, . . .	29,844
1879-80, . . .	21,615	1883-84, . . .	30,590
1880-81, . . .	25,490	1884-85, . . .	30,069
1881-82, . . .	27,403	1885-86, . . .	31,188

The whole number employed by all the corporations making returns to this Board is 35,803.

## STREET RAILWAYS.

Returns were received from 43 street railway companies. During the year nine have been incorporated and added to the list,—the Citizens', Fitchburg, Gloucester, Hoosac Valley, Pittsfield, Newton (under a special act), Lowell & Dracut, and Onset. The Boston Consolidated was incorporated under a special act, being a consolidation of the Highland and Middlesex Companies. The aggregate capital stock is \$9,125,645.00,

being an increase of \$1,048,545.00; their gross debt has also increased \$519,341.60, and now amounts to \$5,464,729.61. The aggregate of stock and gross debt is now \$14,590,374.61.

One corporation made a dividend of 22 per cent., one of 12, one of 10, five of 8, one of 7.03, one of  $6\frac{1}{2}$ , seven of 6, two of 5, one of 4, one of 2, one a regular dividend of 8 and also an extra dividend of 30 per cent. from the surplus of previous years; while twenty-one declared no dividends.

The average rate of dividend on the total amount of capital stock was 5.41 per cent.; and the net earnings (interest deducted) amount to 5.42 per cent. on the aggregate of capital stock and gross debt.

The whole length of track, including branches, sidings, and double track, amounts to 440.135 miles, being an increase of 64.227 miles. The average cost was \$17,272.11 per mile for permanent way, \$8,668.31 for equipment, and \$9,169.82 for land and buildings; making a total cost of \$35,110.24 for each mile of road owned. The number of round trips was 2,878,005, an increase of 179,667 over the previous year; with a mileage of 19,661,675, an increase of 1,494,056. Passengers were carried to the number of 112,087,384, being an increase of 11,340,598 over the number carried during the preceding year. The number of passengers carried on the street railways exceeded the number on the steam roads by 36,244,803.

The gross income was \$5,878,583.05, an increase of \$684,145.05. There was an increase of net income of \$149,987.08; with a decrease of dividends paid amounting to \$12,973.75.

The average amount received for the conveyance of each passenger was 5.25 cents, and the average cost of carrying each person amounted to 4.33; the net profits to the companies being 0.92 cent, against 0.87 cent as compared with last year. The average cost of a round trip was \$1.69, with a profit of 35 cents, being an increase of 2 cents from last year.

The whole number of horses was 10,789, being an increase of 1,004; the number of cars was 2,289, showing an increase of 175, and the number of other vehicles was 150. The number of persons employed on street railways was 4,615, being an increase of 512 over last year. The number of accidents reported was 86, of which nine were fatal. The number injured the previous year was 96; fifteen of whom were killed.

## ACCIDENTS.

The record of accidents for the year ending Sept. 30, 1886, is more deplorable than that of any year since the Wollaston disaster in 1878, though far less fatal than that. Train accidents caused the death of 18 persons and injured 61 others. To these may be added an accident on the Massachusetts Central Railroad, not a train accident, by which 9 Italian laborers were swept from a flat car by coming in contact with a car on a siding, but too near the main track to be cleared; two of them being fatally injured and seven others more or less severely. These accidents were investigated by the Board, as usual, immediately after their occurrence, and special reports were made, which will be found in the appendix. (Appendix B.)

By far the most serious accident of the year was that which occurred on the State road near Bardwell's Ferry. This the Board, as in duty bound, investigated at once, and repeated its investigation until all the available testimony was exhausted. It is unnecessary to say that in examining witnesses and in publishing the result no attention was paid to the probable financial effect upon the Commonwealth. To conceal or to slur over any fact which tended to fix or increase the liability of the State would have been unworthy of her servants. Nothing that has occurred since the report has affected our opinion as to the causes of the accident. These were, — 1. The use as a portion of the embankment of crib-work battered against the slope of a steep ledge; 2. The want of proper drainage at this spot; 3. The over-loading of the embankment at a place where a concealed defect existed. And these causes, in combination with the state of the weather, fully account for the catastrophe.

The whole number of accidents reported to the Board during the year was 525, being 25 more than for the preceding year. The number of casualties to persons was 591, being 74 more than last year. Of these, 203 were killed and 388 were injured; 114 were passengers, 274 were employees, 44 were travellers at grade crossings, and 159 were trespassers. The casualties to passengers were 40 more than during the preceding year; and of these 9 were killed and 43 were injured by causes beyond their own control, while last year no passenger was killed and

but 12 were injured by such causes. The number injured by their own misconduct or imprudence was 10 fatally, and 52 not fatally. Last year, 14 were killed and 48 were injured by their own fault.

Of the 274 casualties to employees, 63 were fatal and 211 not fatal; 213 were trainmen and 61 were employed in other capacities. By coupling or uncoupling cars, two were killed and 105 were injured. Only one accident is reported as occurring where an automatic coupler was used. In that case a damaged United States coupler connected with an ordinary link and pin drawbar. Two trainmen were killed and 6 were injured by overhead bridges. Train accidents killed 8 and injured 18. The most fatal class of accidents to trainmen is falling from trains in motion, 17 persons having been killed and 38 injured in this way, most of them severely. By various other accidents 34 were fatally, and 44 not fatally, injured.

At grade crossings, with gates or flagmen for the protection of travellers on the highway, there were 15 casualties, and at crossings without gates or flagmen, 20. Twenty-two persons were killed and 13 were injured. The greatest number of casualties of this class on any one road occurred at crossings having gates or flagmen, but the most serious accident happened about nine o'clock in the evening at a crossing where the gate-tender had left his post, according to his usual practice, at eight o'clock and the crossing was unguarded. The number of these accidents is more than 20 per cent. less than last year.

The number of trespassers killed and injured was 7 more than last year, 130 of whom were injured when walking or lying on the track, and 29 when stealing or attempting to steal a ride on freight cars. The number killed was 91, being two less than last year. The number of this class of victims of their own folly varies less from year to year than other casualties.

An examination of the tables in the Appendix will show that there is a marked difference in the actual casualties on the several roads, or that there is apparently a failure on the part of some companies to report accidents according to the practice of others and the rules prescribed by the Board. The Boston & Providence Railroad, for instance, reports but one accident to an employee, whereas the other roads terminating in Boston,



report respectively from 23 to 76 casualties to employees. The same road reports no accident happening from coupling or uncoupling cars, while all the other roads report several such casualties, the Fitchburg as many as 48. If the employees of the Boston and Providence have wholly escaped crushed fingers or broken bones they have either been remarkably fortunate or have exercised a caution not usually manifested by brakemen or shifters. That road is also singular in having only two of its 6,119,906 passengers injured more or less seriously, by imprudently jumping from, or attempting to get upon, moving trains. This may be due, in part, at least, to the location of its stations, which are very frequent within its suburban limit, and offer few inducements for passengers to jump from a moving train in order to take a "short cut" homeward. It is possible, too, that its passengers are more cautious than those on other roads, or that the corporation and its employees look more carefully after the safety of passengers. The following table shows the proportion of passengers and employees injured on the several roads terminating in Boston:—

RAILROADS.	Total Passengers Carried.	Passengers In- jured by their own Fault.	Ratio.
Boston & Albany, . . . .	9,726,907	12	1 in 810,575
Boston & Lowell, . . . .	6,700,030	7	1 in 957,148
Boston & Maine, . . . .	17,022,581	15	1 in 1,134,848
Boston & Providence, . . .	6,119,906	2	1 in 3,059,953
Fitchburg, . . . . .	4,130,395	8	1 in 516,299
New York & New England, .	5,240,906	8	1 in 655,113
Old Colony, . . . . .	9,068,790	5	1 in 1,813,758

RAILROADS.	Number of Employees.	Number In- jured.	Ratio.
Boston & Albany, . . . .	5,149	43	1 in 120
Boston & Lowell, . . . .	3,543	34	1 in 104
Boston & Maine, . . . .	4,913	32	1 in 154
Boston & Providence, . . .	994	1	1 in 994
Fitchburg, . . . .	2,327	76	1 in 31
New York & New England, .	3,045	30	1 in 102
Old Colony, . . . .	3,360	23	1 in 146

It is remarkable that on the Old Colony Railroad, with the numerous grade crossings of highways and travelled places on its extensive mileage, no crossing accident has been reported during the past year. This road has not always enjoyed this fortunate exemption, and no company is more persistent in its efforts to abolish these sources of danger.

It will be observed on reference to the tabular statement in the Appendix that most of the roads report much the larger number of trespassers as *killed*, while the Boston & Albany and the New York & New England report the larger number as *injured* merely. It is doubtful whether this is the true result of those accidents in all cases; and it is probable that sometimes severe injuries are reported which subsequently result in death, of which no notice is given to the Board.

The Massachusetts railroads do not show the fortunate comparative exemption from accident to passengers by causes beyond their own control that was shown in the preceding year. Then the ratio was:—killed 0 in 69,603,700 passengers carried; injured 12, or 1 in 5,800,308 passengers carried.

For the year ending Sept. 30, 1886, the total number of passengers carried was 75,842,581; killed 10, or one in 7,584,258; injured 35, or 1 in 2,166,931; total 45, or 1 in 1,685,391.

But the ratio of accidents to the number of passengers carried in a decade is a better criterion of safety or danger in railroad travelling than that for a single year. In the ten years pre-

ceding 1886 the number of passengers carried was 504,626,162. Number killed and injured\* by causes beyond their own control 274, or 1 in 1,841,701. So that the number killed and injured during the past year does not much exceed the average for the ten preceding years, which included the Wollaston disaster of 1878, and the Boston, Barre & Gardner derailment in 1883.

The tabulated statement of train accidents in the United States, prepared from the monthly record in the Railroad Gazette, will be found in the Appendix. If this record contains all the accidents on the railroads of the United States, which is not probable, the railroads of Massachusetts contributed perhaps a trifle more than their share according to mileage. But it is to be remembered that our record is official and made under the law, while many such as are reported here are not made a matter of record elsewhere, or even the subject of newspaper mention.

#### GRADE CROSSINGS.

The number of crossings of railroads and highways at grade, according to the returns, is 2,138, of which 738 are protected by gates or flagmen.

Seventeen grade crossings have been allowed during the year. Only one of them was an important one, and it was permitted because by such action the abolition of two like crossings was secured. Some of the others merely took the place of crossings now existing, some were crossings over streets that only exist on paper, and a few were granted because they were absolutely necessary.

The Act of 1885, chap. 197, designed to promote the abolition of grade crossings, has proved useful, especially on the Old Colony Railroad, where ten level crossings have been abolished. The apparent increase of these crossings on that road as shown in their returns arises from the fact that 37 existing on the Framingham and Lowell Railroad are this year reported as of the Old Colony. It is to be hoped that other companies will follow the good example set by this company in expending time and money to rid the public of the dangers arising from this cause.

\* The earlier tables do not give the number killed and injured separately.



If legislation is needed to facilitate the reduction of the perils arising from this source, we believe that the General Court is ready to act. We repeat our suggestion, that a railroad company resisting the creation of a new grade crossing is not to be regarded as a public enemy, acting only from selfish motives. And we renew the proposition, that where a new highway is laid across a railroad, some tribunal may be empowered in fit cases to apportion among the proper parties the expense caused by the construction of a bridge, notwithstanding the fact that the railroad is the "first comer." Such an act would check the demand for grade crossings, relieve towns from apparent hardship, and remove a source of great discontent.

#### RECENT LEGISLATION.

##### *Weekly Payments.*

Chapter 87 of the Acts of 1886 requires weekly payment of employees by railroad and railway companies as well as by other corporations. No complaint or communication of any kind has been made to the Board relating to this law.

##### *Blocking Frogs.*

Chapter 120, Acts of 1886, provides that all railroads in the State shall, before Jan. 1, 1887, have all frogs, switches and guard-rails on its track (except guard-rails on bridges) adjusted, filled or blocked so as to prevent the feet of its employees from being caught therein. The work is to be done to the satisfaction of the Board, shown by the certificate of their clerk.

In this enactment, the State followed the lead of Michigan, where such a law has been for some time in successful operation. The plan of filling angles so as to prevent the sad accidents arising from their existence is regarded with prejudice by some railroad men, who are ignorant of its working, and with entire favor by those who are acquainted with it. On two roads in this State, the Boston & Albany and the Fitchburg, the work was completed before the passage of the act. On the Old Colony it was begun, and has now far advanced toward completion. Upon most of the roads, progress in this matter has been slow. The Board while inspecting tracks has paid attention to the method in which the work has been done. Its

approval has been given to the method pursued on the roads named above and on the Boston & Lowell. The time has not quite arrived when the law requires the completion of the work,<sup>f</sup> but the requirements of the common law and of humanity would seem to demand that there should be no needless delay in protecting workmen against a terrible form of death.

FLINT & PERE MARQUETTE RAILROAD CO.

EAST SAGINAW, MICH., Nov. 12, 1886.

Hon. THOS. RUSSELL, *Chairman Massachusetts Railroad Commission,*  
20 Beacon Street, Boston, Mass.

DEAR SIR:—I have received a letter from Hon. W. W. Crapo, asking me to write you giving our experience in the use of the “Hart” patent frog filling.

Will say that this company has used this device since the summer of 1882, and it was adopted for all the frogs, switches and guard-rails on this line. Since this line has been equipped with this device, there has not been an accident whereby any one has been injured by being caught in frogs, switches or guard-rails, where anything of this kind would have prevented it. The construction is such that it is not affected by the weather, storms, ice or snow, and there is no liability of any accident being caused by it, such as derailment to trains. It is simple, easily applied, and costs, nominally, nothing to maintain, and when once applied, does away entirely with the risk of brakemen or others being caught and held by the feet. I would refer you to a copy of the “Railroad Gazette,” under date of Friday, Oct. 22, 1886, page 720, a meeting of the Roadmasters’ Association of America. The report of the committee which is contained therein will give you more facts than I have stated, and the statement contained therein is about the experience that we have had.

Can say nothing further in regard to this, only that it has given us entire satisfaction. Yours respectfully,

SANFORD KEELER, *Superintendent.*

### *Relief Societies.*

Chapter 125 permitted any railroad company to unite with its employees or a portion of them in forming a relief society, such as was already authorized by law for the relief of men disabled by accident or sickness, and for pensions to those growing old in the service, and to their families. It also enabled any corporation to become a member of any such society existing under the Act of 1882; and it exempted the

funds of such societies from any process because of any liability or debt of the corporation, or of any other member of a society. We had hoped that such a system would prevent much suffering, give confidence to the men, secure better service, and improve the relations between the employed and their employers.

Unfortunately, as we think, no railroad company has proposed to join any such society; nor, so far as we know, has any company been invited to do so. Some distrust of the proposed action has, as we learn, been caused by what seemed to be the harsh action of a railroad corporation in another State, where it was attempted to make membership compulsory, and where, in case of non-compliance with the terms, arbitrary removal from employment was to be accompanied by the loss of all contributions hitherto made. No such injustice would be possible under the legislation of this State, where the by-laws are framed by the members of each relief society, with the approval of this Board.

It is hoped that more consideration will be given to this subject, in view of the great benefit which the system promises to the men, to the railroad companies and to the public.

The remarks of Commissioner Russell give, briefly, an idea of the legislation desired, and the reasons for asking its adoption.

*“Mr. Chairman and Gentlemen:* My remarks will be brief, for our report contains all that I desire to say, and the Governor’s message tells the whole story in a very few words. We ask for a bill allowing railroad companies to join with their employees in creating and administering relief funds for the men and their families in case of illness, injury, disability and death. The bill is permissive, for compulsory co-operation is not desired; and if legislative action in this form does no good, it can do no harm. If voluntary co-operation between any company and its men is secured, a great good will be accomplished. If they fail to act, it will only be an opportunity lost.

*“The general advantage of benefit associations, for health insurance, life insurance and the like, need not be argued. The number of such societies is the best proof; and they are especially desirable for men engaged in a hazardous business.*

Such associations for railroad men have received special sanction from the Legislature, which by chapter 244 of the Acts of 1882 authorized the formation of relief societies by railroad operatives. We only ask now that railroad companies may be allowed to unite with their men in these societies.

“ The need of legislation is, first, to empower the companies to do what would otherwise be, in legal language, ‘ultra vires,’ or beyond their power. Any stockholder might say, ‘We were chartered to operate a railroad, not to administer charity,’ and he might apply for an injunction, and prevent the directors from carrying out a project for the benefit of their men. It is also desirable to protect the funds from any creditor of the company or of the men, so that they may be exempt from any process of law, and secured to the beneficent purpose for which they were given.

“ The special benefit of such a law to the men will be :—

“ 1. The money contribution of the railroad company. This may be made by a lump sum, given at once, like the \$100,000 which the Baltimore & Ohio Railroad Company gave at the outset, or by some portion of the profits, to be given annually or semi-annually, or by both modes of contribution. It is very desirable that some fixed part of the net profits should be given for this use, so that the men may have a direct interest, although a small one, in the success of the railroad on which they are employed. A moral benefit as well as a pecuniary one would thus be secured. One great advantage of a corporation subscription would be that the association would at once have means of continued life. A society supported solely by assessment may be ruined at the outset, or it may languish until every one is tired of it. The Baltimore & Ohio Association entered at once upon vigorous and assured life.

“ 2. The association will have the aid of the clerical staff of the road, saving cost, and especially making the collection of assessments certain, easy and inexpensive. The paying agent will simply deduct his dues from the monthly, semi-monthly or daily pay of each member. The tax will be collected without cost, and will be paid without effort. The financial advice and skill of the manager of the road will also be freely given, and will save the association from some risks.

“ 3. Above all, relief, when given, will be received not as a



charity, but as a right; not as a matter of favor or caprice, depending upon the whim or the mood of the directors,—possibly depending in amount upon the digestion or the dinner of the president,—but as part of a system governed by fixed rules. Railroad companies now pay gratuities when their injured men have no legal claim; they relieve the families of the dead, and they give easy places, in lieu of pensions, to men who have grown old in their service. All this we propose that they shall do on a larger scale than now, in a more uniform manner, and from a fund which the beneficiary and his associates have helped to form.

“The benefit to the companies will be the securing of better men, better service, more prolonged service, and better relations between them and their employees. A common interest and the care of employers for the right and welfare of the employed will create a tie better than the mere payment of wages. I have referred to a great corporation which felt warranted in making a large expenditure on these grounds. Five years of experience have justified the expenditure. And the Pennsylvania Railroad Company has just followed the example of the Baltimore & Ohio. The public will gain, not only because the proposed measure will promote the harmony and happiness of a very large class of men, but because to the travelling public better men and better service mean increased safety for every passenger. I have heard of railroads where the men are hostile to their employers, where a disaster at one point on the road creates pleasure at every other point. I know railroads where employers and employed regard each other with mutual respect and kindness. And you all know on which kind of railroad it is safer to ride.

“The two bills which are proposed, and between which I have little choice, are mere skeletons, leaving all details to the companies and to the men. And this is necessary, for different companies would have different ideas. No by-laws can be adopted unless the employers and their men are both agreed upon them. The first bill contains some provisions taken from the charter of the Boston & Albany Association, a charter which was obtained after two years of experiment without incorporation. It seems wiser and more in accordance with the spirit of our laws to pass a general act than to give special

charters for each association. We had hoped for the presence of Dr. Barnard, who could explain in detail the working of this system. Severe illness has prevented him from coming at this time. But his excellent article in the 'Popular Science Monthly' for October gives a good account of the plan, and seems to answer all possible objections. The best proof of a system is in its working.

"The system, as has been said before, conflicts with no law now existing, or that may hereafter exist, as to employers' liability. It works in the many States in which the Baltimore & Ohio extends by its main lines, its branches and its leased lines. The proposed law applies to men for whose injuries the companies are liable, and to those for whom no liability will arise. It covers the cases of men who grow old and feeble without accident; and, as it applies to cases of death, it applies to all. I believe that it will directly benefit the great body of railroad workmen, the companies and the public; and I hope that, by recognizing the desirability and proving the possibility of the co-operation of labor and capital, it will aid, however slightly, in the right settlement of a question upon which the fate of civilization depends."

*An Act as to the Rights and Duties of Purchasers of Railroads.*

Chapter 142 was designed to accomplish two purposes: —

1. To enable the purchasers of a railroad sold under foreclosure of a valid mortgage to operate the same, without any dealings with the insolvent corporation. It is for the interest of the creditors, and still more for the interest of the public, that a road in such circumstances shall be operated. And there is no reason why stockholders, who have lost all beneficial interest in the road, should have the power to prevent its operation or to levy tribute for their consent to it.

2. The act seemed desirable as an attempt to subject an assignee of a railroad sold under foreclosure to the same supervision and control which are exercised by the State over other railroad franchises and property.

UNION STATION.

An important act was passed authorizing a union passenger station between Charles River and Causeway Street, in the city of Boston.

The important question of improved railroad facilities for freight and passenger business in the city of Springfield has received attention, and it is hoped that it may result in action.

#### STREET RAILWAY COMPANIES

are made subject to actions of tort in cases of loss of life by negligence (chap. 140). This was intended to cure a defect in former legislation relating to fatal cases of accident on railroads. Street railways are also authorized to use the cable system as a motive power (chap. 337). By chapter 229 each of the street railways authorized to run cars in or into Boston may consolidate with any other such railway, and may, with the consent of the Railroad Commissioners and of the aldermen of the city, maintain the cable system of motive power. Two consolidations have taken place under this Act, but there has been no change of motive power.

#### SAFETY APPLIANCES.

##### *Freight Couplers.*

Chapter 242 provides that in June or July of this year, and of every second year hereafter, the Board shall test safety freight-couplers, as was done under the Act of 1884. The framers of this act apparently desired, on the one hand, to forbid the possible exclusion of some new invention superior in its merits to all that had preceded it; and on the other hand, to prevent the evils that would arise from keeping the coupler question open from day to day with an indefinite number of devices without striking or exceptional merit. They remembered that uniformity is as desirable as excellence, since a combination of different couplers, each good in itself, may be a grave source of danger. It was remembered, also, that everything which increases uncertainty as to the final choice of safety couplers tends to prevent the adoption of any such coupler, except in cases where the law absolutely compels it.

The result of the trials and examinations made by the Board was the adoption of the Boston Automatic Safety Coupler, which was added to the list approved for use in this State.

Replies to a special circular show that the numbers of approved couplers applied during the year are as follows: Ames, 1,356;



Cowell, 111; Hein, 114; Janney, 12; United States, 2,172. In addition to these, the New York, New Haven & Hartford Railroad Company has put on 1,376 Whittemore couplers, which have been approved by the Commissioners of Connecticut. The total number of couplers prescribed by this Board, and now in use on the railroads of the State, is as follows: Ames, 1,650; Cowell, 194; Hein, 506; Janney, 12; United States, 3,012. The Cheshire Railroad has put in 150 Saffords.

Only one accident, a slight one, occurred in connection with the use of any of these couplers, and it did not appear that the nature of the device had any bearing on the accident. But much dissatisfaction exists with regard to some of the couplers prescribed, and little progress has been made here or elsewhere toward the adoption of any universal coupler. The action of the Michigan Commissioner has increased the number which have met official approval. And the New York law, which went into effect on July 1, permits the use of any automatic coupler.

The tendency of opinion among railroad men is toward the selection of some vertical plane coupler. But it seems doubtful whether any one will be universally adopted, unless its use for inter-state commerce shall be compelled by congressional action. It would seem, however, that all compulsory State legislation, prescribing the use of any one coupler, must be unconstitutional and void so far as it relates to inter-state commerce. For no State can direct the manner in which inter-state commerce shall be conducted. And so much of our commerce is inter-state, that only an insignificant fraction will remain subject to the restrictions of local legislation in this respect. If this be so, it is probable that efforts will be made to provide mechanical safeguards to the great volume of traffic which is subject to inter-state and international law.

#### *Protection against Fire.*

Public attention has recently been called, by the "Rio" disaster, to the great peril arising from fire in cases of collision or derailment. The Commissioners have often had occasion to consider this matter, and special attention was given to it at the time of the Bardwell's Ferry accident, when some cars were destroyed by fire, although fortunately no life was lost by it.

The result of our inquiries satisfies us that a system of heating by steam from the locomotive is feasible, safe and unattended by any serious difficulty, so far as important through trains are concerned, and also in regard to cars which are constantly performing a short service, and trains run continuously on a belt line. Experience on the elevated railways shows conclusively that this method of heating is in every way practicable, so far as that system is concerned. The following correspondence of Mr. Beach with the Board speaks for itself:—

CLEVELAND, COLUMBUS, CINCINNATI & INDIANAPOLIS AND  
INDIANAPOLIS & ST. LOUIS RAILWAYS,  
CLEVELAND, OHIO, May 18, 1886.

MR. THOS. RUSSELL, *Chairman Board of Railroad Commissioners, Commonwealth of Massachusetts, Boston, Mass.*

DEAR SIR:—Upon my return to office, after an absence of several days, I find your valued favor of May 10th.

In reply, I beg to say that we are using the Martin Anti-Fire Car Heater on our road, and have done so for the past two years, although not extensively, the use of it being merely a test as to its practicability for general adoption.

On May 20, 1884, the device was applied to our engine No. 417 and coaches Nos. 352 and 353, and to combination car No. 105, which engine and cars were running regularly during the winter of 1883 between Springfield and Cincinnati.

The weather had moderated to such an extent by this time that but very little test to demonstrate the serviceability of the device could be made.

The following winter, however, viz., that of 1884, the test was repeated, and during the most severe weather, when the thermometer ranged between five degrees and thirteen degrees below zero, the cars were made so warm by a pressure of steam registering between two and one-half pounds and five pounds on the steam gauge in the coaches, that our conductors were obliged to open the deck-sash ventilators of the cars.

The winter was so severe during that year that it was with much difficulty that we kept comfortable passengers in other coaches not equipped with the device and running on other trains.

In case the heat in cars equipped with the device becomes oppressive, train-men can regulate the temperature by opening a globe valve, located under end of seat about in centre of each coach.

In the winter of 1885 we equipped another train with the device, and quite as good satisfaction as in the test of the previous winter was obtained.

Our experience shows there is but very little trouble in operating the device, and absolutely no danger whatever, and, moreover, perfect safety from fire in the event of a derailment of train.

The engineers that have been running the locomotives equipped with the device state that the amount of steam consumed by it is scarcely perceptible on the gauge of the boiler, and that the required pressure of steam for motive power was maintained without any augmented labor and without any apparent increase in the consumption of fuel.

We believe this principle of heating coaches to be the correct one, and would be glad were all of our passenger cars heated by that method.

If there is any further information that I can furnish you in regard to this or any other matter, be kind enough to command me.

Yours truly,

G. M. BEACH, *General Manager.*

CLEVELAND, COLUMBUS, CINCINNATI & INDIANAPOLIS AND  
INDIANAPOLIS & ST. LOUIS RAILWAYS,  
CLEVELAND, OHIO, Dec. 10, 1886.

MR. WILLIAM CRAFTS, *Clerk Board of Railroad Commissioners, Commonwealth of Massachusetts, Boston, Mass.*

DEAR SIR:—In reply to your favor of November 29th, duly received, I would say that I still entertain the same favorable opinion of the Martin Anti-Fire Car Heater.

It continues in service on our road between Springfield and Cincinnati and is giving satisfaction in every respect.

Yours truly,

G. M. BEACH, *General Manager.*

The system has been in full use for four years on the Dunkirk, Allegheny Valley and Pittsburgh Railroad. Abundant warmth was obtained even when the thermometer ranged from five to twenty degrees below zero; and only a moderate amount of pressure was required. It is claimed that there is no danger of scalding by escaping steam in case of accident.

The experiments of Mr. Emerson in applying steam heat to cars on the Connecticut River Railroad have been watched with great interest; and the ingenuity and pertinacity of the inventor seem to have met a great measure of success.

The Commissioners have been greatly interested in the efforts of the Boston & Albany Railroad Company to solve the problem of heating cars without fire,—an experiment which,

up to this date, lacks nothing of thoroughness, except the want of extremely cold weather, to test its worth. Five cars make daily trips, except on Sundays, from Boston to Springfield and return, with an even temperature and with sufficient warmth without exhausting power, and apparently without danger. The result seems to have been in all respects satisfactory. When this has been done for another season the experimental stage of the improvement will have passed. Then the question may be to what extent the adoption of this safeguard will be required by law.

#### *Power Brakes.*

Power brakes for freight cars are appliances that are demanded as a matter of economy, and still more for the sake of safety. Their use on such roads as the Atchison, Topeka & Santa Fé, and the Chicago, Burlington & Quincy Railroads answers all questions as to the feasibility and desirability of the device. We believe that the time has come for its general use on our railroads. Here, too, the question of inter-state commerce will arise. Few points, if any, will be regarded as more important than that inter-state commerce should be conducted with the utmost possible safety to life and limb.

#### *Safety Valves,*

which prevent the escape of steam and of scalding water in case of accident, have been devised for the security of train-men and passengers. The Board have already referred to the terrible array of figures which Mr. Forney presented a short time ago, showing the deaths or serious injury of 162 persons by scalding within a period of a year and a half, all resulting from six railroad accidents. Much of this suffering and death could have been saved by the adoption of well-known devices. The Board renews the expression of its belief that a preventible accident is a crime.

#### *Guard Rail on Box Cars.*

“ A Resolve relating to the protection of brakemen on freight trains ” was passed in 1886, as follows : —

*Resolved,* That the Board of Railroad Commissioners be instructed to investigate whether there is need of legislation to provide further



securities for brakemen while operating freight trains, and especially whether box freight cars ought to be furnished with guard rails on the sides thereof; and report the result of their investigations to the next General Court. [*Approved April 9, 1886.*]

A public hearing was advertised for June 14.

No one appeared to advocate any legislation. A few railroad officials opposed action upon the grounds that it was needless, expensive and injurious to the cars, rendering them liable to leakage. It was also urged that, as other States were not affected by our laws, such an act would only afford partial protection, and might even be a source of danger to those who should rely upon such a safeguard in cases where none was provided.

The Commissioners, while inspecting the roads of the State, have made full inquiries of all classes of officials and employees as to the need and probable value of the proposed guards. We have not found any general desire to have them adopted. Very little information has been obtained as to accidents, which would have been prevented by the use of a rail. Indeed accidents by falling from the sides of cars are very rare. The more frequent and more dangerous casualties of falling from the ends of cars would not be obviated or reduced by this device. A rail across the ends of box cars would be a grave source of danger, and would not be advocated by any one conversant with the subject.

Considering the absence of any demand for legislation on the part of those who are supposed to be benefited by it, and regarding the slight advantage to be derived from the proposal as compared with other possible improvements, the Board are not prepared to recommend any action by the Legislature.

#### FREIGHT RATES ON THE HOUSATONIC RAILROAD.

Chapter 338 of the Acts of 1885 gave to the Board authority to fix freight rates on certain roads operated by the Housatonic Railroad Company. After the fixing of such rates, and the violation of our order by the company, a suit was begun by the district attorney of the western district, acting under direction of the Attorney-General. Upon an agreed statement of facts, judgment was given against the company

upon the ten counts of the indictment, and the case was taken to the Supreme Court of this State, where it is now pending.

Some of the counts may be affected by the recent decision of the Supreme Court of the United States in the case of *Wabash, St. Louis & Pacific Railway Company v. Illinois*. This case is of general interest, and may render some new legislation desirable.

The suit grew out of the Illinois short-haul law. That law differs from ours, and would never have received the approval of our Legislature or of this Board. The question involved in this suit, however, was in no way affected by that difference, but relates only to the matter of inter-state commerce, and overrules the law as laid down by Chief Justice Waite in *Peik v. Chicago N. W. R. Co.*, 94 U. S. 164, where it was held that, until Congress acts in regard to inter-state commerce, the State had a right to regulate rates as to freight "taken up outside the State and brought within it, or taken up inside and carried without."

The Board has had occasion to remark heretofore that this case, while binding upon us as long as it stood as a decision of the highest court in the land, was liable to be overruled. It is now overruled, and Justice Miller states that the court never "consciously and deliberately" assented to the doctrine laid down by Chief Justice Waite in the former case. The Chief Justice, with Justices Gray and Bradley, dissent from the decision of the majority; but this, of course, does not affect its validity. It is enough that a majority overrule the decision pronounced by the Chief Justice.

The decision does not deal with any question as to the right of a State to supervise corporations of its own creation, or exercising franchises within its borders only at its will. Neither does it disturb that portion of the former decision which affirms so strongly the power of government to deal with fares and freight rates and facilities.

At the time when this case was decided complaints were pending before the Board against the New London Northern Railroad Company for exacting higher rates for freight shipped at Chicago, and "stopped off" at Amherst and Belchertown, than was charged for like freight carried from Chicago to Willimantic, thus apparently violating "the short-haul law."

Action on these complaints was given up because of the decision in *Wabash, St. Louis & Pacific Railway v. Illinois*. Amherst and Belchertown are not "billing points" on the line in question. It is not known that any case has arisen in this State where the old practice has been revived of charging the through rate, and adding the local return rate for freight "stopped off" on its way to a more distant place. If any such case should occur, it will perhaps be possible to frame a law to forbid the practice even under the recent decision. Its immediate effect will probably be to hasten congressional action upon the subject of inter-state commerce, with consequences, which it is difficult to foresee in full.

#### ACTION AS TO THE MEIGS ELEVATED RAILWAY COMPANY.

By chapter 87, Acts of 1884, it is provided that "No location [of the Meigs Elevated Railway] for tracks shall be petitioned for in the city of Boston until at least one mile of the road has been built and operated, nor until the safety and strength of the structure and the rolling stock and motive power shall have been examined and approved by the Board of Railroad Commissioners or by a competent engineer to be appointed by them, and to be paid by said corporation a price fixed by said Board."

After examining the structure, rolling stock and motive power of the Meigs Elevated Railway as they existed Oct. 27, 1886, the Board appointed Gen. George Stark of New Hampshire, a competent and independent civil engineer, to act upon the approval of the structure, rolling stock and motive power. His report is given in full (Appendix I.), and the Commissioners approve it, and will in due time take formal action upon the points submitted to the Board.

#### BRIDGE OVER ROWLEY RIVER.

The Railroad Commissioners and the Harbor and Land Commissioners, sitting as a joint commission under the provisions of chapter 261, Acts of 1886, after due notice, gave a hearing to all persons interested in or affected by the maintenance of a draw in the bridge of the Eastern Railroad over Rowley River; and having considered all the facts and the public interests in the matter, authorized the Eastern Railroad Company to re-



construct the bridge without a draw, subject, however, to the condition that the General Court may, at any time hereafter, require the company or its successors to construct and maintain a draw, and that they "shall at all times and in all respects conform to the directions and requirements of the General Court in relation hereto."

#### THE TROY AND GREENFIELD RAILROAD.

The annual hearing by the Board, under the contract with the Fitchburg Railroad Company for operating the State road, showed the following result for the year ending Sept. 30, 1885:—

Gross revenue, . . . . .	\$452,019 12
Gross earnings, . . . . .	416,566 31
Expenses, . . . . .	208,186 65
Balance due the State, . . . . .	208,379 66
Amount already paid the State by the Fitchburg Railroad Company, . . . . .	207,860 61
Amount due the State by the Fitchburg Railroad Company,	519 05

The operating expenses are 49.977 per cent. of the gross earnings, against 54.39 the previous year. This percentage applies by contracts to the other railroad companies engaged in operating the State road.

The Fitchburg Railroad Company claimed as expenses \$220,013.53, which would have entitled it to 52.816 per cent. of the gross earnings of \$416,566.31.

The appeals against the awards heretofore made by the Board have all been waived by the Fitchburg Railroad Company.

As usual, the most interesting portion of the annual report is found in the special reports upon the various questions which come from time to time before the Board. And more numerous, and perhaps more important than these, are the matters which have been acted upon finally without formal hearings.

THOMAS RUSSELL.  
E. W. KINSLEY.  
E. A. STEVENS.

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## APPENDIX.

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[A.]  
*Receipts of Flour in Boston during Ten Years, ending Sept. 30.*

FLOUR — BARRELS.										
	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.
Boston & Albany Railroad, .	830,514	784,149	536,767	462,852	629,355	569,692	699,553	610,673	667,148	520,810
Boston & Lowell Railroad, .	138,914	121,416	191,265	236,443	160,704	104,376	133,491	132,825	186,304	119,324
Fitchburg Railroad, .	129,687	248,566	478,852	549,354	869,971	777,466	1,268,605	1,514,586	1,172,335	1,747,500
Grand Junction (B. & A. R. R.),	364,377	447,518	600,184	936,788	911,357	608,133	1,110,564	1,107,960	1,193,323	894,118
N. Y. & New England R. R.,	—	—	89,327	89,542	190,169	227,576	331,391	278,944	101,214	69,011
Total by through lines } from West, . . . . .	1,463,492	1,601,649	1,896,395	2,274,974	2,761,556	2,347,243	3,543,604	3,642,788	3,320,324	3,350,763
Boston & Maine Railroad, .	43,935	32,092	42,631	28,361	29,227	13,343	16,126	9,383	1,462	1,431
Boston & Providence R. R.,	11,679	3,084	1,387	4,421	4,241	3,588	5,548	1,876	349	1,091
Eastern Railroad, . . . . .	—	—	2,985	6,064	11,335	4,732	9,950	11,776	1,580	—
Old Colony Railroad, . . . .	841	2,685	2,162	3,392	3,646	5,115	4,390	3,218	1,911	3,414
Portland Steamer, . . . . .	2,299	220	182	150	1,893	352	459	187	25	905
New York Steamer, . . . . .	132,062	111,083	120,382	80,125	18,642	2,121	991	6,130	1,857	3,963
Baltimore Steamer, . . . . .	40,496	20,047	9,364	15,941	16,162	4,907	7,562	21,648	12,574	13,196
Philadelphia Steamer, . . . .	7,069	5,053	1,045	1,022	300	1,625	10	1,370	250	274
New Orleans Steamer, . . . .	—	—	—	697	—	—	225	—	—	—
Sail-Vessels, . . . . .	1,200	1,310	300	400	—	—	1,823	4,937	2,741	135
Other Sources, . . . . .	—	—	—	—	—	—	—	—	—	—
Total from Seaboard, . . . .	239,581	175,574	180,438	140,573	85,646	35,783	47,084	62,725	22,779	24,409
Total from all Sources, . . .	1,703,073	1,777,223	2,076,833	2,418,859	2,853,079	2,383,026	3,590,688	3,705,513	3,343,103	3,375,172

Increase, 32,069 barrels, — .9 per cent.

## Receipts of Corn in Boston during Ten Years, ending Sept. 30.

## CORN — BUSHELS.

	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.
Boston & Albany Railroad,	1,336,180	1,219,245	1,006,160	659,467	1,349,388	807,175	927,490	1,041,605	1,603,457	1,380,395
Boston & Lowell Railroad,	534,732	534,849	617,026	3,836,219	794,534	1,355,529	571,595	510,214	408,400	226,370
Fitchburg Railroad,	1,328,430	2,003,559	3,472,195	2,897,389	3,659,457	2,640,372	4,111,500	3,876,725	3,764,185	4,399,160
Grand Junction (B. & A. R.R.),	1,731,836	5,799,140	5,855,850	7,328,338	8,560,384	3,170,842	3,386,291	4,193,700	2,987,880	2,185,400
N. Y. & New England R. R.,	-	-	23,695	29,060	177,519	329,114	843,554	363,637	38,051	76,551
Total by through lines from West,	7,931,178	9,556,793	11,014,926	14,750,473	14,541,282	8,303,032	9,840,430	9,985,881	8,801,973	8,267,876
Boston & Maine Railroad,	49,657	70,599	144,295	202,752	257,841	255,295	305,077	124,635	6,150	60,386
Boston & Providence R.R.,	-	-	120	-	-	-	700	800	500	1,170
Eastern Railroad,	-	-	11,300	5,700	2,500	7,050	16,270	6,654	1,425	-
Old Colony Railroad,	-	-	-	-	-	7,650	5,300	5,450	500	1,100
Portland Steamer,	-	-	-	-	-	-	-	-	-	-
New York Steamer,	8,332	6,500	-	-	-	5,000	-	-	-	-
Baltimore Steamer,	6,086	1,492	6,400	76	-	10,811	15,712	32,942	6,498	4,816
Philadelphia Steamer,	6,766	8,682	-	-	-	-	-	-	-	240
New Orleans Steamer,	-	-	-	-	-	-	16,444	-	1,500	-
Sail-Vessels,	-	-	-	-	-	-	*72,891	5,416	-	-
Other Sources,	17,926	16,186	6,000	-	200	8,000	-	-	-	-
Total from Seaboard,	88,767	103,459	168,115	208,528	260,541	293,806	432,394	175,907	16,573	67,712
Total from all Sources,	8,019,495	9,660,252	11,183,041	14,959,001	14,801,823	8,596,838	10,272,824	10,161,788	8,818,546	8,335,588

Decrease, 482,958 bushels, — .54 per cent.

\* Savannah Steamer.



## Receipts of Oats in Boston during Ten Years, ending Sept. 30.

OATS — BUSHEL.										
	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.
Boston & Albany Railroad, .	791,638	656,349	728,634	604,310	1,094,476	1,411,900	1,332,825	1,754,628	2,170,405	2,179,530
Boston & Lowell Railroad, .	223,729	202,823	256,548	181,636	201,602	469,327	163,421	78,876	487,889	474,539
Fitchburg Railroad, .	1,718,324	1,807,810	1,828,720	1,994,597	1,751,469	1,615,072	2,734,844	3,124,318	2,877,370	4,695,640
Grand Junction (B. & A. R. R.),	416,190	377,400	592,235	720,454	663,000	472,450	558,200	702,250	463,700	194,670
N. Y. & New England R. R.,	-	-	22,600	32,341	46,650	163,000	93,118	85,260	33,722	19,615
Total by through lines } from West, .	3,149,881	3,044,372	3,428,787	3,533,338	3,757,197	4,131,749	4,882,408	5,745,332	6,033,086	7,563,994
Boston & Maine Railroad, .	12,796	53,433	23,350	46,442	21,050	103,875	28,400	5,925	7,575	4,182
Boston & Providence R. R.,	-	-	-	-	-	-	-	-	-	-
Eastern Railroad, .	-	-	5,700	12,950	8,100	138,835	20,005	7,100	400	-
Old Colony Railroad, .	-	-	-	-	-	2,750	800	3,100	600	2,325
Portland Steamers, .	1,440	-	-	-	-	-	-	-	-	-
New York Steamer, .	-	-	-	-	-	-	-	-	-	-
Baltimore Steamer, .	1,300	-	-	-	-	-	-	1,437	-	-
Philadelphia Steamer, .	4,566	-	-	-	-	-	-	-	-	-
New Orleans Steamer, .	-	-	-	-	-	-	-	-	-	-
Sail-Vessels, .	-	-	-	-	-	-	-	-	-	-
Other Sources, .	-	-	-	-	-	-	-	-	2,968	-
Total from Seaboard, .	20,092	53,433	29,050	59,392	29,150	245,460	49,205	17,562	11,543	6,507
Total from all Sources, .	3,169,973	3,097,805	3,457,787	3,592,730	3,786,347	4,372,209	4,931,613	5,762,894	6,044,629	7,570,501

Increase, 1,525,872 bushels, — 25 per cent.

## Receipts of Wheat in Boston during Ten Years, ending Sept. 30.

WHEAT — BUSHELS.										
	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.
Boston & Albany Railroad,	264,275	130,618	174,310	65,691	50,525	28,700	36,005	24,900	91,855	40,919
Boston & Lowell Railroad,	38,800	298,654	916,431	981,761	337,253	250,641	198,731	94,666	106,968	199,574
Fitchburg Railroad,	50,870	233,416	1,306,085	724,743	994,446	918,763	990,289	842,662	1,193,555	730,443
Grand Junction (B. & A. R.R.),	678,380	3,441,910	2,753,450	2,436,921	2,832,769	1,458,400	1,037,170	722,100	871,300	1,127,371
N. Y. & New England R.R.,	-	-	7,568	34,232	955	175,400	295,100	103,074	-	121
Total by through lines from West,	1,032,325	4,104,598	5,157,844	4,243,348	4,215,948	2,831,904	2,557,295	1,787,402	2,263,678	2,098,428
Boston & Maine Railroad,	112	400	27,448	53,522	23,932	37,884	17,957	10,400	-	1,088
Boston & Providence R. R.,	1,614	770	1,001	102	-	-	10,000	600	-	-
Eastern Railroad,	-	-	-	-	-	800	1,015	1,400	600	-
Old Colony Railroad,	-	-	-	-	-	500	-	-	-	-
Portland Steamer,	-	-	-	-	-	-	-	-	-	-
New York Steamer,	150	2,452	-	-	-	-	-	-	-	-
Baltimore Steamer,	163	-	-	-	-	-	-	-	-	-
Philadelphia Steamer,	-	-	-	-	-	-	-	-	-	-
New Orleans Steamer,	-	-	-	-	-	-	-	-	-	-
Sail-Vessels,	46,333	35,017	-	-	-	-	-	4,500	-	-
Other Sources,	-	-	-	-	-	-	-	-	-	-
Total from Seaboard,	48,372	38,639	28,449	53,624	23,932	39,184	28,972	16,900	600	1,088
Total from all Sources,	1,080,697	4,143,237	5,186,293	4,296,972	4,239,880	2,871,088	2,586,267	1,804,302	2,264,278	2,099,516

Decrease, 164,762 bushels, — 7 per cent.

*Summary of Grain Receipts in Boston during Ten Years.*

	Flour — Barrels.	Corn — Bushels.	Oats — Bushels.	Wheat — Bushels.
1877, . . .	1,703,073	8,019,495	3,169,973	1,080,697
1878, . . .	1,777,223	9,660,252	3,097,805	4,143,237
1879, . . .	2,076,833	11,183,041	3,457,787	5,186,293
1880, . . .	2,418,859	14,959,001	3,592,730	4,296,972
1881, . . .	2,853,079	14,801,823	3,786,347	4,239,880
1882, . . .	2,383,026	8,596,838	4,377,209	2,871,088
1883, . . .	3,590,688	10,272,824	4,931,613	2,586,267
1884, . . .	3,705,513	10,161,788	5,762,894	1,804,302
1885, . . .	3,343,103	8,818,546	6,044,629	2,264,278
1886, . . .	3,375,172	8,335,588	7,570,501	2,099,516

[B.]

Tabular Statement of Accidents reported to the Board of Railroad Commissioners during Year ending Sept. 30, 1886.

RAILROADS.	GENERAL STATEMENT.							PASSENGERS.			
	Whole Number of Persons Injured.	Passengers.	Employees.	At Grade Crossings and Stations.	Trespassers.	Children.	Adults.	Killed.	Injured.	By Causes beyond their own Control.	
										Killed.	Injured.
Boston & Albany, . . . . .	103	12	43	9	39	5	98	31	72	-	-
Boston & Lowell, . . . . .	68	10	34	4	20	9	59	26	42	-	-
Boston & Maine, . . . . .	98	21	32	9	36	9	89	39	59	3	5
Boston & Providence, . . . . .	15	2	2*	6	5	3	12	10	5	6	10
Fitchburg, . . . . .	114	8	76	8	22	8	106	26	88	-	2
New York & New England, . . . . .	53	9	30	3	11	4	49	10	43	1	†7
Old Colony, . . . . .	45	5	23	-	17	2	43	24	21	-	8
Boston, Winthrop & Shore, . . . . .	-	-	-	-	-	-	-	-	-	1	4
Cheshire, . . . . .	-	-	-	-	-	-	-	-	-	-	-
Connecticut River, . . . . .	-	-	-	-	-	-	-	-	-	-	-
Hanover Branch, . . . . .	-	-	-	-	-	-	-	-	-	-	-
Milford & Woonsocket, . . . . .	3	1	1	-	1	-	3	-	3	-	1
Nantasket Beach, . . . . .	-	-	-	-	-	-	-	-	-	-	-
New Haven & Northampton, . . . . .	5	1	3	1	-	-	5	5	-	1	-
New London Northern, . . . . .	-	-	-	-	-	-	-	-	-	-	-
New York, New Haven & Hartford, . . . . .	3	-	2	1	-	-	3	-	-	-	-

[illegible]

\* One a licensed newsboy.

† One a cattle-tender on freight train.











*Train Accidents Reported to the Board of Railroad Commissioners  
during the Year ending Sept. 30, 1886.*

ACCIDENTS.	Number.	Persons Killed.	Persons Injured.
COLLISIONS.			
<i>Rear.</i>			
Passenger train with empty cars on siding, by misplaced switch, . . . . .	4	1	4
Passenger train with freight train on main track, . . . . .	1	-	6
Passenger train with freight train on siding, but not clearing main track, . . . . .	1	-	-
Passenger train with coal car pushed or blown upon main track, . . . . .	1	-	-
Construction train with extra freight train, . . . . .	1	-	-
Rear of parted freight train with forward part, . . . . .	1	-	-
Loaded freight car parted from train with empty car, . . . . .	1	-	-
<i>Butting.</i>			
Passenger train with empty cars being switched from main track, . . . . .	1	-	-
Passenger train leaving station with empty train coming in, . . . . .	1	-	-
<i>Crossing.</i>			
Passenger train on branch with passenger train on main line, at junction, . . . . .	1	1	6
	13	2	16
DERAILMENTS.*			
Passenger train, by sliding of embankment, . . . . .	1	11	29
Passenger train, by land slide, . . . . .	1	-	-
Freight train, by washout, . . . . .	1	1	1
Freight train, by fallen rock, . . . . .	1	-	-
Passenger train, by reason of interlocking signal, and switch being deranged, . . . . .	1	-	-
Freight train, cause not stated, . . . . .	1	-	-
	6	12	30

\* Derailments causing slight damage, and no serious delay of passenger trains, are not reported. In the accidents included in the above table, where there were no casualties to persons there was greater or less delay of passenger trains and damage to rolling stock.



Tubular Statement of Accidents reported to the Board of Railroad Commissioners during Ten Years.

	GENERAL STATEMENT.								PASSENGERS.				EMPLOYERS.		
	Whole number of Casualties to Persons.	Passengers.	Employees.	At Highway Crossings and Stations.	Trespassers.	Children.	Adults.	Fatal.	Not Fatal.	From Causes beyond their own Control.	From the Irregularity of Care.	Fatal.	Not Fatal.	Train-men.	Other Employees.
Year ending Sept. 30, 1877,	274	33	95	37	109	26	248	134	140	9	24	7	26	65	30
“ “ 1878,	304	38	96	37	133	37	267	150	154	2	36	10	28	68	28
“ “ 1879,	405	208	83	32	82	25	380	115	290	186	23	21	188	71	12
“ “ 1880,	346	24	157	54	111	24	322	146	200	1	23	9	15	113	44
“ “ 1881,	415	42	200	47	126	23	392	184	231	11	31	15	27	167	33
“ “ 1882,	414	27	198	57	132	29	385	163	251	4	22	9	15	158	40
“ “ 1883,	524	61	266	50	147	33	491	191	333	1	24	14	21	192	73
“ “ 1884,	457	76	182	38	161	33	424	181	276	44	32	14	62	139	43
“ “ 1885,	517	74	233	55	152	28	486	163	351	12	62	14	60	191	42
“ “ 1886,	583	107	273	44	159	43	540	201	382	45	62	20	87	212	61
Total, . . .	4,239	690	1,783	451	1,312	331	3,935	1,628	2,608	315	339	133	529	1,356	406
Average, . . .	423.9	69.0	178.3	45.1	131.2	33.1	393.5	162.8	260.8	31.5	33.9	13.3	52.9	135.6	40.6

Tabular Statement of Accidents, etc., during Ten Years — Concluded.

	EMPLOYEES — Concluded.							AT HIGHWAY CROSSINGS.				AT STATIONS.		TRESPASSERS.				
	Coupling or uncoupling Cars.	By Overhead Bridge.	By Train Accidents.	Falling from Train.	Various Causes.	Fatal.	Not Fatal.	With Gates or Flagmen.	Without Gates or Flagmen.	Fatal.	Not Fatal.	Fatal.	Not Fatal.	Walking or riding on track.	Unlawfully riding on Cars.	Fatal.	Not Fatal.	Suicide.
Year ending Sept. 30, 1877,	25	5	21	18	26	35	60	12	21	19	14	2	2	79	30	71	38	8
“ “ 1878,	24	10	15	15	32	34	62	12	17	20	9	3	5	102	31	84	49	3
“ “ 1879,	25	7	8	24	19	28	55	13	17	13	17	1	1	70	12	54	28	5
“ “ 1880,	43	12	21	47	34	49	108	20	30	19	31	1	3	93	18	72	40	4
“ “ 1881,	59	28	18	46	48	72	128	12	24	11	25	5	6	104	22	81	45	3
“ “ 1882,	60	18	15	43	62	56	142	25	29	21	33	3	-	109	23	75	57	7
“ “ 1883,	86	14	13	55	97	62	203	18	26	15	29	4	2	112	33	93	54	3
“ “ 1884,	68	12	11	35	56	47	135	19	13	13	19	4	2	126	35	104	57	4
“ “ 1885,	91	10	19	42	70	29	204	20	30	23	27	1	3	120	32	93	59	3
“ “ 1886,	107	8	25	55	78	62	211	15	20	22	13	6	3	130	29	91	68	3
Total, . . .	588	124	166	380	522	474	1,308	166	227	176	217	30	27	1,045	265	837	495	43
Average, . . .	58.8	12.4	16.6	38.0	52.2	47.4	130.8	16.6	22.7	17.6	21.7	3.0	2.7	104.5	26.5	83.7	49.5	4.3

*Tabular Statement of Accidents to Employees in Massachusetts during Ten Years.*

YEAR ENDING SEPT. 30.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.
Injured by coupling cars, . . .	25	24	25	43	49	60	86	68	91	107
by overhead bridges, . . .	5	10	7	12	28	18	14	12	12	8
by train accidents, . . .	21	15	8	19	18	15	13	11	19	25
by falling from trains, . . .	18	15	24	47	46	43	55	35	42	55
by other causes, . . .	26	30	17	34	47	62	97	56	69	78
by explosion of locomotives, . . .	-	2	2	2	2	-	-	-	-	-
Totals, . . .	95	96	83	157	200	198	265	182	233	273

*Tubular Statement of Train Accidents, and Causes of the same, in the United States in each Month during the Year ending Sept. 30, 1886.*

	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	Total.
<b>COLLISIONS.</b>													
Rear collisions, . . . . .	46	25	27	20	21	16	19	17	13	27	33	38	302
Butting collisions, . . . . .	13	8	8	10	7	5	3	8	8	8	13	17	108
Crossing collisions, . . . . .	3	2	2	5	4	1	2	2	1	3	6	3	34
Total, . . . . .	62	35	37	35	32	22	24	27	22	38	52	58	444
<b>DERAILMENTS.</b>													
Caused by —													
Unexplained, . . . . .	7	6	9	4	11	9	5	9	12	8	5	11	96
Broken rail, . . . . .	9	5	5	6	11	6	2	5	3	—	3	1	56
Broken bridge, . . . . .	1	2	1	1	—	3	2	—	1	2	2	2	17
Broken axle, . . . . .	5	4	2	3	4	7	4	5	4	7	5	10	60
Broken truck, . . . . .	1	4	1	1	—	—	—	—	1	1	1	1	11
Accidental obstruction, . . . . .	1	5	1	—	1	1	1	2	1	4	3	—	17
Cattle on track, . . . . .	3	3	—	2	1	2	3	7	3	6	3	3	36
Misplaced switch, . . . . .	6	4	5	7	6	2	4	5	4	4	3	15	65
Malicious obstruction, . . . . .	1	1	—	1	—	2	1	1	2	2	1	1	13
Broken wheel, . . . . .	5	5	—	1	4	1	2	2	3	4	5	3	35
Open draw, . . . . .	—	2	—	—	—	—	—	—	—	—	—	1	3
Broken frog, . . . . .	1	—	1	—	—	—	—	—	—	1	1	3	13
Broken brake-beam, . . . . .	2	—	—	—	—	—	1	1	—	—	—	3	10
Runaway engine, . . . . .	—	—	—	—	1	—	—	—	—	—	—	—	1

[illegible]



*Tubular Statement of Train Accidents, etc., in the United States in each Month during the year ending Sept. 30, 1886.*

	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	Total.
ACCIDENTS WITHOUT DERAILMENT.													
Caused by—													
Accidental obstruction, . . . . .	1	1	1	2	1	1	1	1	1	1	1	1	2
Boiler explosion, . . . . .	1	1	1	1	1	1	1	4	1	2	4	2	16
Car burned while running, . . . . .	2	1	1	1	1	2	1	1	1	2	1	1	10
Broken parallel-rod, . . . . .	2	2	2	1	4	2	1	1	1	1	4	4	24
Broken axle or truck, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
Broken wheel or tire, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	3
Broken coupling, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
Cylinder-head blown out, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
Overhead bridge, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
Loose door on freight car, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
Falling rock in cut, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
Flue collapsed, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
Explosion of powder, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
Caving of tunnel, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
Runaway train, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
Steam-chest burst, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
Bridge-beam falling on track, . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1
	6	4	5	5	5	4	3	8	2	4	14	8	68
Total number of train accidents in each month in 1885-86, . . . . .	123	96	74	94	98	81	66	93	75	91	115	135	1,141
Total number of train accidents in each month in 1884-85, . . . . .	105	96	105	145	216	86	81	62	75	76	92	91	1,230

Total number of train accidents in each month in 1883-84, . . . . .	174	122	112	147	110	115	88	76	71	89	89	100	1,293
Total number of train accidents in each month in 1882-83, . . . . .	136	125	148	168	184	142	106	120	91	119	145	158	1,641
Total number of train accidents in each month in 1881-82, . . . . .	131	133	113	137	88	99	81	94	72	92	139	153	1,332
Total number of train accidents in each month in 1880-81, . . . . .	120	145	135	223	149	113	63	85	73	12	129	144	1,381
Total number of train accidents in each month in 1879-80, . . . . .	104	86	69	62	65	65	71	46	56	78	112	124	958
Total number of train accidents in each month in 1878-79, . . . . .	61	68	63	113	88	61	50	37	64	81	79	78	843
Total number of train accidents in each month in 1877-78, . . . . .	82	83	66	75	67	49	46	50	56	54	75	76	777
Total number of train accidents in each month in 1876-77, . . . . .	103	96	88	147	56	58	69	46	49	53	98	84	947
Total number of train accidents in each month from Sept. 30, 1876, to Sept. 30, 1886, . . . . .	1,104	1,041	983	1,277	1,114	897	711	680	659	823	1,035	1,114	11,438
Derailment of passenger trains 1885-86, . . . . .	15	17	14	20	20	20	9	18	10	16	18	19	196
Derailment of freight trains, . . . . .	40	40	18	34	41	35	30	40	41	33	31	50	433
Number of persons killed, . . . . .	11	12	7	16	13	45	23	8	23	16	7	14	195
Number of persons injured, . . . . .	45	72	98	36	126	116	91	62	44	33	67	59	849
Collision between passenger trains, . . . . .	7	1	1	5	3	1	3	1	1	3	8	1	35
Collision between passenger and freight trains, . . . . .	10	12	7	9	12	5	6	8	7	18	14	23	131
Collision between freight trains, . . . . .	45	22	29	21	17	16	15	18	14	17	30	34	278
Number of persons killed, . . . . .	25	27	23	23	6	3	-	8	7	7	15	28	172
Number of persons injured, . . . . .	87	46	54	44	30	15	14	85	42	54	32	81	584

*Tabular Statement of Train Accidents, etc., during the Year ending Sept. 30, 1886, — Concluded.*

	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	Total.
Accidents without derailment:													
To passenger trains, . . . . .	3	3	2	2	3	3	1	3	—	2	7	6	35
To freight trains, . . . . .	3	1	3	3	2	1	2	5	2	2	7	2	33
Number of persons killed, . . . . .	—	—	1	2	2	1	—	7	3	—	9	—	25
Number of persons injured, . . . . .	2	—	1	10	1	—	—	23	—	1	18	8	64
Total number of accidents each month, . . . . .	123	96	74	94	98	81	66	93	75	91	115	135	1,141
Total number of persons killed in each month, . . . . .	36	19	31	41	21	49	23	23	38	23	31	42	366
Total number of persons injured in each month, . . . . .	134	118	153	90	157	131	105	170	86	88	117	148	1,497
Number of accidents causing death to persons in each month, . . . . .	17	14	19	19	16	18	10	13	12	14	20	18	190
Number of accidents causing injury, but not death, . . . . .	26	26	20	16	19	21	17	34	15	26	30	41	291
Number of accidents causing no injury to persons, . . . . .	80	56	35	59	63	42	39	46	48	51	65	76	660
Percentage of all without injury to persons, . . . . .	65.0	58.0	47.0	63.0	64.0	52.0	59.0	49.0	64.0	56.0	56.9	56.3	57.8

Average number of accidents per day in each month in 1885-86, . . . . .	3.97	3.20	2.39	3.03	3.50	2.61	2.20	3.00	2.50	2.93	3.71	4.50	-
Average number of persons killed per day in each month, . . . . .	1.16	0.63	1.00	1.29	0.75	1.58	0.77	0.74	1.10	0.74	1.00	1.40	-
Average number of persons injured per day in each month, . . . . .	4.32	3.93	4.94	2.90	5.61	4.23	3.50	5.48	2.87	2.84	3.77	4.93	-
Average number of casualties to persons per accident per month :													
Number of persons killed per accident, .	0.293	0.198	0.419	0.426	0.214	0.605	0.348	0.244	0.440	0.253	0.270	0.311	-
Number of persons injured per accident, .	1.089	1.229	2.068	0.957	1.602	1.617	1.591	1.828	1.147	0.967	1.017	1.096	-
Number of accidents in each month caused by defect of road or equipment, .	47	25	30	22	38	33	23	41	27	31	43	46	406
Number of accidents caused by negligence in operating, . . . . .	50	36	28	37	30	19	20	21	21	35	46	64	407

*Tabular Statement of Train Accidents in the United States during Ten Years.*

	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.	1884-85.	1885-86.	Total.
Total number of train accidents, . . . . .	947	779	843	937	1,480	1,332	1,640	1,293	1,230	1,141	11,642
Total number of persons killed, . . . . .	313	200	182	227	435	385	475	388	331	366	3,302
Total number of persons injured, . . . . .	1,280	689	751	946	1,691	1,467	1,798	1,913	1,534	1,497	13,516
Total number of accidents causing death to persons, . . . . .	132	106	100	121	225	224	258	228	211	190	1,798
Total number of accidents causing injury, but not death, . . . . .	217	143	165	197	320	284	387	327	282	291	2,604
Total number causing no injury to persons, . . . . .	598	530	578	622	935	824	1,004	738	735	660	7,299
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Collisions, rear, . . . . .	177	138	172	239	363	388	403	316	313	302	2,831
Collisions, head, . . . . .	98	79	79	111	161	140	191	146	125	108	1,238
Collisions, crossing, . . . . .	18	7	12	17	30	26	38	27	31	34	240
Collisions, passing, . . . . .	-	-	-	-	-	-	1	1	-	-	2
Collisions, unexplained, . . . . .	4	1	1	-	-	2	-	-	-	-	8
Derailments, . . . . .	600	520	532	532	855	740	921	736	695	629	6,760
Other accidents, . . . . .	50	34	47	38	71	36	86	67	66	68	563
Total accidents, . . . . .	947	779	843	937	1,480	1,332	1,640	1,293	1,230	1,141	11,642



[C.]

## SPECIAL REPORTS ON ACCIDENTS.

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DERAILMENT AND FATAL ACCIDENT AT ASSONET ON  
THE OLD COLONY RAILROAD, FEB. 12, 1886.

During the great freshet, a train of eighty-two empty coal cars on its return from Brockton to Somerset was derailed while passing over an embankment in Assonet (Freetown), and sixty cars were thrown from the track. The fireman, Thomas Russell, was killed. No one else received any serious injury.

Cowen Brook passes under the embankment by a double culvert, which is of abundant capacity for the passage of the water even in the heaviest rains. But the removal of two planks from the Durfee Dam, 3 or 4 miles above this spot, carried away a reservoir on an abandoned privilege known as the Baker Place, and let down a flood which washed away the embankment. When the coal train went up to Brockton in the morning, the water was flowing freely through the culvert with abundant space to spare; and the water was not soiled. This state of things continued when the spot was visited by the section visitor, less than half an hour before the derailment. When the flood came, the turbid condition of the water showed that some accident had occurred on the stream. Every precaution had been taken; and the result was due to a casualty which the managers of this road could not prevent, and which they had no reason to expect. Nor was anything left undone by the men in charge of the train, who had no time to hold it back after they saw their danger.

By the Board,

THOMAS RUSSELL, *Chairman*.

FEB. 23, 1886.

COLLISION ON THE BOSTON & LOWELL RAILROAD AT  
NORTH WOBURN JUNCTION, FEB. 12, 1886.

A passenger train with seven cars, leaving Boston for Lawrence, at 6.15 p. m., collided with the Montreal express with a baggage and two passenger cars, killing one passenger and injuring several passengers and train hands. The junction is guarded by a system of interlocking signals and switches.

1. The immediate cause of the collision was the neglect of the engineer of the Lawrence train to regard the distance signal, which was green, signifying "caution," and calling on the engineer to bring his train under control, so that it could be stopped before reaching the home signal. This was wholly disregarded, and the train was run as if "safety" had been indicated, until the home signal indicating "danger" was reached, when it was too late to stop the train. The engineer states that the distance signal was white, indicating "safety." But his statement is shown to be incorrect. (1.) It is directly contradicted by other witnesses, who testify that the green signal was given. (2.) It is contradicted by the statement of the engineer himself, who distinctly admitted, just after the accident, that the distance signal was green, and that his mistake was in not bringing his train under control. (3.) If the engineer's present statement was correct, the Montreal train could not have reached the point of collision. The signals and switches are so adjusted, that when "safety" is indicated at the southern distance signal, "caution" is indicated at the northern distance signal, and "danger" at the northern home signal, and the switch sends any inward train on the main line on to the down track of the Woburn branch, which here acts as a "throw-off point." Therefore, if the southern distance signal had been white, and if the Montreal engineer had persisted in running against his signal, he would have gone safely over the down track of the branch. The engineer, therefore, testified to something that is physically impossible. Neither by negligence nor by malice could the state of things be produced which he describes, and the route of the Montreal train is more conclusive testimony against him than that of the witnesses whose word conflicts with his.

2. Even with the negligence of the engineman in not observing or not heeding the warning signal, the collision would have been impossible, if the interlocking system at this junction had been furnished with a "throw-off point" or ground switch for trains on the Woburn branch. The railroad company has sought to avoid accidents by establishing at this junction a costly system of interlocking switches and signals. This is not compelled by law, nor is a "know-nothing

stop" required at this point in the absence of such a system; for this is not a crossing of one road by another, but a cross-over of one track with other tracks of the same road. The system as found here is perfect to this extent, that the signals cannot indicate safety to two opposing trains. Safety from collision is absolutely secured, if trainmen regard the signals. But, as this case shows, if the signals are not obeyed, a collision is possible, unless the system is supplemented by what are called "derailing points," "throw-off points" or "ground switches." When this device is used, the careless engineer, instead of colliding with the other train, finds his own train carried on to a side track, where no harm can happen. Sometimes this side track ends in a sand-bed. But however it is constructed, no collision between two trains can occur with such a system. Without this device, the system is imperfect and promises immunity from collision without securing it. There are in the State railroad junctions which were established before this device was known, and where the lay of the land makes such a system difficult or dangerous. But no difficulty exists at the point in question; and if it did exist, a change of the precise point of junction might well have been made to gain the means of obtaining security from collision. The Board recommends that at this, and at like junctions, prompt action be taken to avoid the possibility of collision by using ground switches; and we commend this safety device for adoption upon all railroads in similar cases.

3. The fireman, who distinctly saw the green light, seems to have been remiss in not calling the engineer's attention to the fact that the distance signal indicated "caution." It is doubtful whether the engineer, who had been employed in switching, and who was running over this route on his third trip, fairly comprehended the meaning of a green signal. This is the more probable, because green is regarded as the opposite of red, and is used on switch targets on this and on other roads to indicate safety. The position which the engineer now assumes in his defence prevents us from learning positively whether this was or was not the case. But no one can doubt the importance of thoroughly instructing the men in charge of a train as to the meaning of signals, and of catechising them so as to be sure that they understand them.

4. No blame attaches to those in charge of the Montreal express train. They obeyed the signal and did all that was possible to avoid the disaster.

By the Board,

THOMAS RUSSELL, *Chairman.*

MARCH 8, 1886.

DERAILMENT OF PASSENGER TRAIN ON THE STATE  
RAILROAD, APRIL 7, 1886.

The investigation has been protracted in order to obtain the testimony of witnesses, and the evidence afforded by excavation. In conducting it we have been aided by investigations made upon the spot and by the report of a very eminent civil engineer, who visited the scene of the disaster at our request, and who had the advantage of a former connection with the Troy & Greenfield Railroad.

Passenger train 35, leaving North Adams for Boston at 4.45 P. M., was made up as follows: Engine, tender, express and baggage car, postal and baggage car, Fitchburg smoking car, one Troy and Boston passenger coach, one Fitchburg passenger coach and one Wagner parlor car. When going up the grade, at a point midway between Bardwell's Ferry and West Deerfield, a little before 6 P. M., at moderate speed, on the outward or southern track, the outer rail and a portion of the track gave way, wrecking the locomotive and throwing the cars down the embankment, which is here over 100 feet high. Most of the trucks remained on the track. The cars, with the exception of the Troy and Boston coach, were destroyed by the shock or by fire, three of them being burned either by the breaking of their lamps or by the demolition of the stoves. Out of 48 persons on the train 47 were injured, of whom 11 were killed at once or have since died.

The road is owned and maintained by the State; and this portion of it is operated by the Fitchburg Railroad Company. A freight train, with 29 cars and an engine weighing 51 tons, ran over this part of the track a little before 4 o'clock. The State track-walker passed over the spot at 4.45 P. M., and removed some slight obstructions from the ditch. He saw nothing that conveyed any idea of danger. Other officials had inspected the road without observing any indications of trouble. Nor was there anything to warn the engineer of train 35 until he felt the track giving way beneath his locomotive. He at once reversed the engine to check the speed of his train.

The portion of the roadbed where the accident occurred is part of the original construction, a single track rebuilt about nineteen years since, and it stands partly on solid rock, made by blasting a ledge, and partly on the embankment made outside of this ledge by dumping earth and fragments of rock. The cliff above the track is about 60 feet high. The width of the roadbed is 31 feet, 9½ feet being outside of the outer rail. The horizontal distance of the top of the bank from the river is 120 feet, the vertical height being 101 feet,



and the distance measured on the slope 175 feet. About two years ago a second track was laid inside the original track, on a new road-bed 12 feet wide, made by blasting and cutting into the rock.

In general this Board, when investigating an accident, does not consider the question of legal liability. But when accidents occur on the State road it is our duty, under the contract between the State and the operating company, to apply the rules of law to the facts, and thus to decide the question between the parties to that contract as to which shall bear the loss. This question, however, does not arise until the accounts of the company are presented after the termination of the railroad year. It will then be decided upon the evidence now in possession of the Board, and such further testimony as may be hereafter obtained.

The pressing question now is to learn the cause of the disaster, so that a repetition of like accidents may be prevented or rendered less disastrous. The attention of the Board has been directed to several points.

1. It has been suggested that more frequent patrolling would do much to insure safety. But it appears that the practice on the State road conforms in this respect to the usage on the best railroads. At all events this accident would not have been averted by any frequency of patrolling that has ever been practised or suggested. A track-walker had visited the spot and given it special attention about an hour before the casualty occurred; and there is no reason to believe that his presence five minutes before the arrival of train 35 would have resulted in any good. It appears also, that, owing to the prevalence of wet weather, the whole body of section men and an extra force had been engaged for some time in watching all exposed points on the road, their special object being to look out for the sliding of earth or stones on to the track, and not for the sliding of the track itself.

2. The train was running at a moderate speed, and was not on a curve, but on a straight line, the tangent which includes the place where the accident occurred being 300 feet in length.

3. Attention has also been directed to the fact that some of the cars were destroyed by fire. It is true that no passenger was burned to death, and only two persons suffered at all from fire. But the burning of three cars emphasizes the danger from this source, which has already been too well known from other railroad disasters. The law in regard to illuminating oil was complied with, and is always obeyed on this road, and, as we believe, on all the roads in the State. The statute forbids the use of naphtha or any compound of naphtha, or of any oil that will ignite at less than 300° Fahrenheit. The heating apparatus in each car was provided with the approved safeguards against

fire. But this accident shows, what common sense also shows, that if fire is used at all in cars such a disaster as this must be attended with peril from its use. In a slight collision or derailment the ordinary safety devices are of great value ; but when a car is hurled from the top of a rocky precipice, making five revolutions in its descent, as was the case here, these safeguards will fail. Railroad managers generally are not sufficiently acquainted with the use of steam for heating cars to warrant a recommendation of its adoption in this State. The present law assumes that fire will be used. On some roads in other States steam from the locomotive boiler has been used with success for heating cars. Our railroad men fear new dangers as well as inconvenience from the adoption of this device. The subject deserves careful attention ; and it may be that improved devices will remove some of the objections that now exist to this method of warming cars.

4. The cause of the disaster was a slide of part of the embankment. And the cause of this slide was the concurrence of three faults in construction.

(1.) In 1866-68, when this portion of the road was reconstructed over the very imperfect roadbed of Messrs. Haupt & Co., a piece of crib-work was placed in the embankment, occupying a considerable space midway between the track and the river. This was made of round, rough timbers fastened together by wooden pins, "battered" against the slope of a steep ledge, and filled with broken rock. It probably occupied a ravine in the mountain-side, and was intended to retain the filling. This crib-work was afterward covered with earth and rock, so that its presence was unknown to the present managers of the road. The contractor had forgotten it, and denied that there was any such work on the road ; but after the accident the projecting ends of timber revealed its existence, and excavation has shown its extent and character. The pins have rotted away and the timber has greatly decayed. Its appearance is that of wood that has long been enclosed in moist earth, and much of the time in earth saturated with water. The period when this structure was placed in the embankment was fixed by a witness who heard his father bargain with the contractor for the hemlock trees of which it was in part made, and who had often seen it and climbed over it. The exact period when it was first covered with earth and rock cannot be ascertained. But it was before the road came into the hands of the present manager ; and he never had any reason to suspect that this mode of construction had been used.

(2.) When the railroad track was "renovated" in 1874-75, the plan called for an open culvert by which the water accumulating in the ditch on the northerly side of the track at this place would



be drained into the river. Twelve hundred feet of ditch now lie directly west of the place of the accident, and 90 feet lie directly against it. The proposed culvert would have secured thorough cross drainage at this very point. It was thought desirable by the engineers in charge of the work, but was abandoned as unnecessary, or, as it is supposed, because of "insufficient appropriations and the impatience of the people with the great and seemingly never-ending expenditures." In the absence of such a culvert the melting snow or rain and the water dripping from the cliff above the track constantly collected in the ditch, and instead of flowing through it, percolated through the embankment, probably finding its way between the sloping ledge and the rotting crib-work which rested on it until the time came for the slide. A heavy rain had fallen the day before—not enough to cause a washout or to flow over the face of the track, but enough to lubricate the slope on which the crib-work had once been placed. The flow of water was probably somewhat increased by cutting into the rock when the second track was laid. It is evident to the sight that water does now flow through the embankment at this place. It should be said in justice to the present State manager that the ditches on the road are remarkably good. As one proof of this, it happened at the last official inspection by this Board that three experts who accompanied the Commissioners expressed their admiration of the drainage, and one of them, referring to the ditches, volunteered the remark: "We seem to have got home to the Pennsylvania Railroad." Those who know that road, and who know the estimation in which it is held by its "people," will appreciate this compliment. But drainage which is sufficient to protect a well-built embankment will not serve for one that holds such a source of danger as was hidden at this spot.

(3.) When the second track was added to the road in 1884, much of the broken rock was dumped on the southern slope of the embankment, with the idea of widening and strengthening it, and to dispose of the material. Such of the rock as reached the foot would aid in sustaining the bank; but that which remained high and over the weak spot would by its weight become a source of danger, and coöperate with the water in producing the final disaster. The three causes together were needed to produce the sad result, and together they abundantly account for it. Once more, it should be remembered that what would have been proper on a well-made embankment only became dangerous upon one that contained a concealed defect. It is hardly necessary to say that the State manager is not only giving careful attention to this spot, but that, as soon as possible, every weak or suspected place upon the road will be examined and made secure.

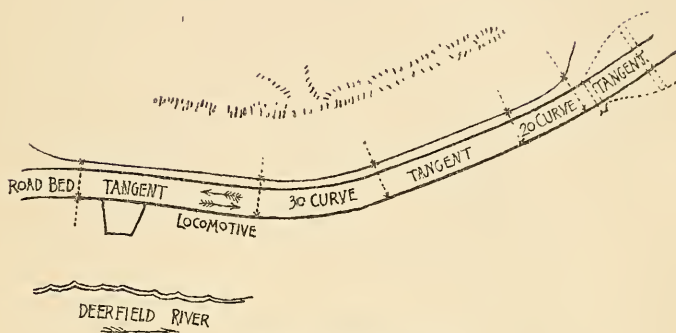
5. There is no evidence or suggestion of any fault of negligence or otherwise on the part of the Fitchburg Railroad Company, or of any one in its service. Those engaged in operating this train were men of experience, fidelity and skill. No blame could be attributed to any one of them. After the accident everything possible was done by the representatives of the railroad and the State to render service to the injured. H. P. Littlejohn, the engineer of the wrecked train, although wounded, bruised and fatally scalded, crawled up the steep bank, and walked half a mile toward Bardwell's, that he might flag any approaching train, and avert a new disaster. He died the following day. Such heroism as his deserves generous recognition. Charles Richardson, the fireman, showed similar devotion. After aiding his associates, he, with the blood streaming from his head and face, walked on the track to West Deerfield in order to warn approaching trains and to summon help. Conductor Foster, in spite of his wounds and burns, saved at least one life — that of a woman who was in danger of drowning in the river.

6. The death of Mr. Littlejohn resulted from his inhaling scalding steam, and calls attention to the necessity for precautions against this source of danger. Safety-valves have been devised, which prevent the escape of steam or hot water in cases of accident, and thus to some extent insure locomotive engineers and firemen, as well as passengers, against this peril. Casualties of this kind are of frequent occurrence. Mr. Forney, in a paper on attachments to boilers, read before the Master Mechanics' Association in 1881, refers to six accidents which happened within a year and a half, and in which 79 persons were killed and 83 injured by scalding. The Board earnestly recommends that all railroad managers consider the adoption of some device that will shield a deserving class of men from a terrible form of danger, and which in many accidents will protect passengers also against exposure to a most painful form of death.

By the Board,

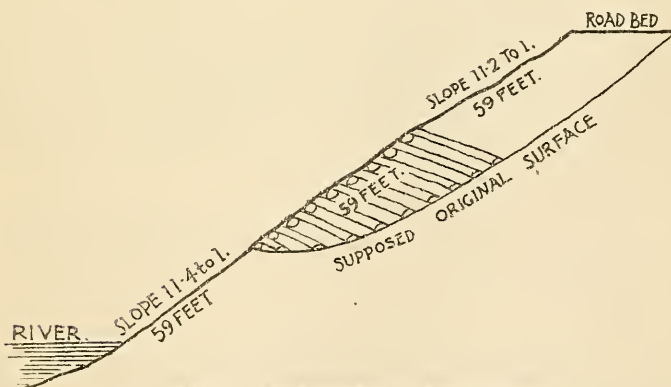
THOMAS RUSSELL, *Chairman.*

MAY 22, 1886.



SCENE OF THE ACCIDENT.

The above plan shows the roadbed and its curves, with the ditch on the north side, above which rises the solid rock 30 or 40 feet, forming almost a perpendicular wall. The accident occurred just to the left of where the word "locomotive" appears, and where the engine of the fated train was left on the bank.



THE CRIB-WORK SHOWN BY EXCAVATION.

## COLLISION ON THE WORCESTER, NASHUA &amp; ROCHESTER RAILROAD AT PEPPERELL, JUNE 19, 1886.

The rear collision of June 19, between a passenger train and a freight train at Pepperell on the Worcester, Nashua & Rochester Railroad, was owing to the neglect of rules and orders on the part of the engineer of the freight train. It was a case where, in his haste to reach a place of rest, the engineer "took the chances" of a collision with a regular train, rather than to remain on a siding in a safe place. In doing this he also grossly violated the rule restricting the speed of freight trains. Running as he did, the approaching passenger train should have been flagged. The conductor shared the fault of the engineer, as he did not remonstrate against the risk which was run.

These men had been at work from 10 A. M. on Friday till Saturday evening, when the collision occurred, without any opportunity for sleep on Friday night. Such continued work is injurious to the men, and therefore dangerous. Anxiety to reach a place where he could rest was given by the engineer as his excuse for what he did. The recklessness produced by bodily and mental fatigue has caused many accidents more serious than this. Even when men are desirous to do overwork for the sake of extra pay, they should be restrained from excessive labor, both for their own sake and from a regard to the safety of others.

There was no fault on the part of any one connected with the passenger train. Obedience to the rules and orders of the managers would have prevented the collision. Fortunately the injury occasioned was slight. But the managers of this and of all railroads should learn from this occurrence that it is wrong and hazardous to overwork the men whom they employ.

By the Board,

THOMAS RUSSELL, *Chairman*.

JUNE 24, 1886.

## FATAL ACCIDENT AT A GRADE CROSSING OF THE BOSTON &amp; MAINE RAILROAD IN WAKEFIELD, JULY 2, 1886.

On the night of July 2, John Measures and three other persons were instantly killed while driving over the crossing of Albion Street, by the Boston & Maine Railroad in Wakefield. Another traveller approaching the spot heard the train some time before its arrival,



checked the speed of his horse and gave repeated warning to Mr. Measures — who drove by him — calling his attention to the train and advising him to stop. The train was the Portland express due in Boston at 9.23 and at Wakefield at 9 P. M.

The crossing is guarded by a gate, but the gateman left his post at 8 P. M. on this occasion, as he always did. Besides the Portland express there are nine regular trains passing this point between 8 and 12 P. M., one of which (due at 10.04) does not stop at the station near the crossing. The bell was rung properly. It had been the practice to whistle when approaching Albion Street until after the passage of chapter 334 of the Acts of 1885, when upon the petition of the selectmen and other citizens of Wakefield whistling at this crossing was forbidden by the Board.

The views of the Commissioners in regard to that act are set forth in the annual report for 1885, pages 26–28, as follows: —

“Chapter 334 empowers the commission, after notice and hearing, to forbid or regulate the use of the locomotive whistle at any specified highway crossing. It was enacted on the petition of parties who urged that the injuries and loss of life resulting from the use of the whistle exceeded the benefit of such use. They spoke of accidents arising from the frightening of horses, and still more of the disturbance and loss of sleep which were caused by it, and which, in case of illness, were often attended with fatal results. The railroad companies did not oppose the passage of the bill, only asking that it should be so drawn as to protect them in their obedience to its provisions. Heretofore they have been peculiarly situated in regard to this matter. The law required the ringing of a bell or the sounding of a whistle; and in most cases the bell would be the appropriate warning. But if a crossing accident occurred, the question was always left to the jury, whether at this particular crossing, and in this special case, the whistle ought not to have been sounded; and juries were sure to find that it ought to have been used, and to return a verdict for the plaintiff. The companies, therefore, could not consult the comfort and health of the community without exposing themselves to heavy penalties. Under the new law, an order of this Board will shield the company acting in obedience to it. Four petitions have been acted on, and whistling has been forbidden at the several crossings covered by these petitions. The Board believes that this legislation is wise. They agree with their predecessors in holding that the value of the whistle as a danger signal is impaired by its constant use as a mere crossing signal; that such use inflicts a heavy penalty upon the innocent to protect the reckless and undeserving, and that at many crossings the whistle is simply a useless annoyance. It is not improbable that fatal accidents will occur at some of the crossings where whistling is now dispensed with. Indeed, it is certain that at some time they will occur, for such fatalities have happened from time to time when whistling was permitted; and its cessation will not relieve careless people from danger. But such accidents will not disprove the wisdom of the law. If the natural

horror arising from the occurrence of a fatal casualty should ever lead to a condemnation of the statute and a demand for its repeal, it should be remembered that the benefits of the law are constant, although they are not visible; that no law can always shield men from the results of their own recklessness, and that a highway-crossing accident is almost impossible under any state of law, if travellers will use ordinary care."

It is an illustration of these views that at this very crossing two accidents — one of them fatal — occurred while the practice of whistling was in full force; and that on two occasions travellers have driven through the closed gates. No one precaution will always shield travellers from the consequences of their own negligence, and no one can have imagined that the discontinuance of a precaution would operate as a safeguard where both parties were negligent. In this case the testimony shows negligence on the part of the driver, who was warned not to venture on the crossing. It also appears that it was the practice of the railroad managers to withdraw the gateman at 8 P. M., although several regular trains, one of them a full express, run over the road between 8 and 12 P. M. This is an unsafe practice, tending to endanger travellers, especially those who know the existence of a gate at the crossing. To such persons, the fact that the gate is not closed is an assurance that no train is due. The upright bar of the gate is a safety signal, and if it is a false signal, it is a source of danger.

A "night man," in addition to the station agent, was employed at the station, who might have tended the gate, and who does now tend it, but at this time it was not regarded as a part of his duty. The Board has heretofore expressed its views as to the danger resulting from the withdrawal of gatemen or flagmen during the time when trains are running over railroads. The Boston & Albany Railroad Company, which never sounds a whistle as a crossing signal at any point within the city limits, guards its important crossings for the whole twenty-four hours, and withdraws its flagmen and gatemen from none until midnight. The Boston & Providence also guards its suburban crossings at each end of the road during the whole period of twenty-four hours. This safe and prudent practice is strongly recommended to all railroad managers.

By the Board,

THOMAS RUSSELL, *Chairman.*

JULY 15, 1886.



## DEATH OF MISS EMILY B. COX.

The death of Miss Emily B. Cox, near Oak Grove station, on the Boston & Maine Railroad, occurred in this way: Train 103 left Boston for Reading at 6.05 P.M. At a distance of about 600 feet from Oak Grove station, express train 106, bound for Boston, was seen to be approaching. Train 103 was therefore slowed, so as to prevent a meeting of the two trains at the station. After the express had passed, steam was put on (the grade being ascending), and speed was increased. Unfortunately, Miss Cox left the train without waiting for it to stop, or for the station to be announced, and was thrown under the wheels of the car in which she had been riding and was killed.

The result was solely due to her error in leaving the train before it had stopped, and before the station was announced. No fault appears in the rules of the company, nor any negligence in its operation. The Board has heretofore recommended the placing of gates on the cars, but such gating as we suggested would not have prevented this casualty. We referred to the use of gates as practised on the Boston & Albany road—gates which are closed on the side next to the opposite track, and which thus prevent passengers from leaving on the wrong side. The unfortunate victim, on this occasion, left on the right side but at the wrong time. We have had occasion to renew our recommendation as to the use of gates, but we are not prepared to advise that upon such trains as the one in question gates should be locked on both sides of the platform, to be opened at every station, with all the delay and annoyance that would arise from such a practice.

By the Board,

THOMAS RUSSELL, *Chairman.*

Nov. 22, 1886.

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COLLISION ON THE BOSTON & ALBANY RAILROAD  
AT PITTSFIELD, NOV. 20, 1886.

This collision was investigated, not because of its results, but because of what the result might have been, and because any such accident to an express passenger-train should be inquired into, although, by good fortune, no serious damage is done. Train 14, from Springfield to Albany, is due at Pittsfield at 1.18 P.M. When it arrived on Saturday with five passenger-cars, the engineer (at the

distance of ten or twelve car lengths from a switch leading to a side-track) saw that the switch was wrong. The train was running at the rate of twenty-five or thirty miles an hour, which was promptly reduced by reversing the engine and applying brakes. A locomotive, with a caboose car attached, stood on this track, and both engines were considerably damaged by the collision; no one was seriously hurt.

The switch-tender, shortly before train 14 came in sight, had let a train on to the side-track; and after closing the switch he walked, as is his practice, toward the approaching train and gave a signal meaning "all right." A distance-signal, 1,000 feet from the switch, had given the same notice, showing that the switch was closed; and this was observed by the section foreman. But after train 14 had passed this signal, and while the switch-tender was signalling for it to come on, Timothy Buckley, a boy of twelve, threw the switch open, and thus let the express train on to the side-track. The boy was there, as he had occasionally been before, to bring his dinner to a brother who is a brakeman on the road. He had never thrown a switch before, nor had he anything to do with the operation of the railroad. His story is that the switch-tender, Mr. Morrow, directed him to throw the switch, and explained how it was to be done; that Mr. Morrow then walked toward the train and made a motion with his hands, calling out something which he understood to be a direction that now was the time for throwing the switch.

This is flatly denied by Mr. Morrow, and is in itself incredible. It assumes that Mr. Morrow, without any motive, deliberately planned the wrecking of an express train filled with passengers, and proceeded to execute his plan in broad daylight and in the presence of witnesses. The boy evidently did not see the folly of the story which he told; but having, while Mr. Morrow's back was turned on him, done a reckless and mischievous act, he now composes an impossible story as a defence. He was probably wholly ignorant as to what he was doing, and may, in his ignorance, have supposed that it was the right thing to be done.

The accident would have been impossible if Mr. Morrow had done his duty by locking the switch. The rules require, as the rules of all railroads do, that in such a case the switch should be locked. "Whoever throws a switch off the main track must know that it is put back in proper position and locked." — [Rule 12.] These rules are given to every man employed by the company. Mr. Morrow had received a copy from the proper source, but had neglected to read it; and it had not occurred to him that it was unsafe to leave the switch unfastened. Another rule requires the careful reading of all the regulations, but Mr. Morrow had not read this rule.

The engineer acted with promptness and energy, saving his train from a great disaster.

The Board has nothing to add to this statement, except to suggest that this occurrence shows that it is necessary to give oral advice to employees that they read the rules placed in their hands.

By the Board,

THOMAS RUSSELL, *Chairman*.

Nov. 27, 1886.

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DERAILMENT ON THE BOSTON & LOWELL RAILROAD  
AT WINCHESTER, NOV. 26, 1886.

The derailment of an outward-bound passenger train at Winchester on the Boston & Lowell Railroad on November 26 was caused by striking the casting of a misplaced Tyler switch. It resulted in damage to rolling stock amounting to \$1,500. The engineer and fireman of the derailed train were slightly injured, but were able to testify before the Board. The switch, shortly before the arrival of the train, had been thrown for a train going from a siding upon the main track, and the switchman had forgotten to throw it back to the main track. The engineer acted with promptness as soon as he came in sight of the switch, and no blame attaches to him or to any of the train hands.

The only matter deserving of remark is the inadequacy of this switch and of many of the old switches on our railroads when tried by the increased weight of the new style of locomotives. The object of safety switches is to prevent just such accidents as this. And when this switch was first laid under authority and command of law, it was a proper one for the business then done on the road. But an increase amounting, according to the testimony, to ten tons for each engine, with an increase of speed also, demands an increase of strength in the safety device which seeks to guard against derailments by such accidents as this.

The Boston & Lowell Corporation has recognized the fact, and is supplying its whole main track with split switches. It was expected that the work would have been completed before this time, and notwithstanding various causes of delay, it will probably be done before the ground is frozen. Other companies are doing the same. The attention of all railroad managers is called to the necessity of providing safeguards against the danger arising from the constant increase in the size and weight of locomotives.

By the Board,

THOMAS RUSSELL, *Chairman*.

Nov. 30, 18

[D.]

## PETITIONS FOR GRADE CROSSINGS.

SELECTMEN OF FALMOUTH, PETITIONERS FOR A  
GRADE CROSSING OF THE OLD COLONY RAILROAD.

The selectmen of Falmouth ask for the third time our assent to a level crossing over the Old Colony Railroad track by a town way. And they propose, if it is given, to take action for separating the grades at two other crossings, so that the net result will be to lessen the number of these dangers. The railroad company makes a generous offer, viz., to build the bridges and abutments in order to aid in gaining this result. If it is accomplished there will be two safe ways by which travel can cross from one side of Falmouth to the other. And as much of it is pleasure travel, some of which is conducted by ladies, there is more reason than usual to expect that a safe choice will be made.

The often repeated views of the Board against grade crossings compel them to permit one, when by so doing they can secure the abolition of two more dangerous, and in the same town. With this expression of opinion, final order will be suspended to await action by the town.

By the Board,

THOMAS RUSSELL, *Chairman.*

FEB. 8, 1886.

On the 21st of July, it being shown that the County Commissioners of Barnstable County had adjudged that a separation of grades should be made at the two crossings referred to in the foregoing report, the Board gave its assent for the new grade crossing asked for.



SELECTMEN OF ATTLEBOROUGH, PETITIONERS FOR A  
GRADE CROSSING OF THE ATTLEBOROUGH BRANCH  
RAILROAD.

The selectmen of Attleborough have obtained from the County Commissioners a judgment that public necessity requires that Peck Street be constructed at a level with the tracks of the Attleborough Branch Railroad, and they ask the assent of this Board. Peck Street extends to each side of the railroad location. The proposed crossing is specially dangerous, because of a curve in the railroad. The objections of the Board to such crossings are well known, and were fully set forth when it was proposed to extend this same street over the main line of the Boston & Providence Railroad.

But here a grade crossing actually exists, and will exist in full force whether it is legalized or not. No other mode of crossing is practicable. The inhabitants of at least eight houses daily pass over this proposed crossing, and many of them do so under an admitted claim of right. It is acknowledged by the railroad company that at least fifteen heads of families have a right of way to and from their houses for themselves and their families, and for those who supply their wants. Moreover, the number who have the right is so great that no attempt is ever made to prevent any person from crossing, and, in fact, the way is very freely used, both by foot passengers and teams, — as freely as any part of any street. These rights of way were created by deed, and there was testimony, which, under a recent decision of the Supreme Court, would create such rights by prescription, if there were no deeds.

The evils attending a grade crossing, therefore, exist, and the railroad company admits that it cannot prevent them. They will be somewhat diminished by the new location, which will substitute a straight street for the crooked way now in use. The sole objection to the granting of level crossings is not the possible expense to railroad companies, but the danger to travellers on the highway and the railroad. As these dangers will not be increased, and as the high degree of convenience, which the law calls “necessity,” demands a level crossing, the Board gives its assent thereto.

THOMAS RUSSELL, *Chairman.*

JUNE 25, 1886.

SELECTMEN OF WINCHENDON *v.* CHESHIRE RAILROAD COMPANY, FITCHBURG RAILROAD COMPANY AND BOSTON & ALBANY RAILROAD COMPANY.

The complaint of the selectmen is that the crossing of Central Street in that town is improperly occupied by the freight trains of the above-named companies; and they ask an order which will relieve the crossing from this annoyance.

The case was heard at Winchendon, and a decision has been delayed until a plan of the premises could be prepared by an expert.

There is no doubt that the street is obstructed to a great and troublesome extent. But it is plain, although the obstruction can be somewhat reduced, it cannot be avoided while the location of these railroads remains as it now is. A simple order to the railroad companies to discontinue the use of this crossing "for making up or disconnecting freight trains," cars or engines, or "for the purpose of distributing freight or freight cars," would only make it impossible to conduct the freight business of the roads. There are two ways of removing the present trouble.

1. Separation of grades would, of course, prevent all obstruction of the street. But we have no proof that this is desired by the people; the expense would be enormous, and great injury would result to the property of abutters on the highway. The public, also, would be put to inconvenience. At all events, we do not feel called upon to recommend an application to the County Commissioners for this purpose.

2. The establishment of a union passenger station near the spot now occupied by the farther freight house of the Cheshire road, and of a union freight depot on or near the present location of the Fitchburg freight house, would relieve the existing difficulty and furnish improved facilities to the public.

We have no means of judging how this project would be received by the people of Winchendon. It can only be effected by legislation, which would apply not only to the three railroad companies named, but to the Monadnock road also. We can only recommend to the people of Winchendon to consider this question, and to ask for legislation, if, on the whole, they desire it.

In the mean time we advise the managers of all the railroads to exercise constant vigilance in reducing to the lowest amount the obstruction and annoyance caused by their use of this crossing. And we have reason to believe that they have not waited for this advice, but that they have given orders to this effect to all the men in their employ.

By the Board,

Nov 1, 1886

THOMAS RUSSELL *Chairman*.



[E.]

## PASSENGER AND FREIGHT FACILITIES AND RATES.

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### BEL AIR MANUFACTURING COMPANY AND OTHERS *v.* BOSTON & ALBANY RAILROAD COMPANY.

The petitioners ask the Board to recommend a reduction of coal rates from North Adams to Pittsfield from one dollar per gross ton to sixty-five cents. The respondents offer to fix the rate at ninety cents per gross ton for a car load. The question, at the request of the petitioners, and with the assent of the respondents, has been argued in writing. The coal to which the question relates comes from Clearfield County in Pennsylvania, and is carried to North Adams at very low rates, in consequence of keen competition. The purchasers at Pittsfield naturally desire to take advantage of this competition; and in order to do so they are entitled to reasonable rates from North Adams. But they would not claim specially low rates, or rates corresponding to the low ones at which the coal is carried to North Adams.

It is not claimed that the rate of ninety cents, or even the rate of a dollar, is excessive as compared with the general coal rates on the Boston & Albany Railroad. Nor can a claim for reduction be founded on the tariffs of other Massachusetts and New England railroads. This will appear from the table given below. And it will be noticed that the transportation in these cases is generally on the main line from a terminal point, in the direction of a great volume of traffic. As we have had occasion to say before, "Transportation from an important terminal point can be done at a lower rate and at a greater profit than business from one way station to another; and transportation on the main line from a chief terminus is generally done at a lower rate than on a branch road. The simple reason is that there is more business to be done, and therefore the road can afford to do it at more favorable rates." The Board has also referred

to the fact that the railroad company in many cases acts as stevedore, and so making an independent profit can afford to reduce its charge as a carrier. Making due allowance for these considerations the table fails to show that the rates in question are excessive.

RAILROADS.	From	To	Miles.	Rate.
Boston & Lowell,	Boston,	E. Billerica,	19	\$ 75
	(Mystic Wharf).			
	"	Billerica,	21	75
Boston & Maine,	"	N. Billerica,	22	75
	Boston,	Ballardvale,	21	85
	"	Andover,	23	85
	"	Lawrence,	26	85
Boston & Providence,	"	Lowell,	28	85
	India Point,	E. Foxboro',	20½	*1 10
Fitchburg,	(Providence).			
	Boston,	E. Foxboro',	21½	*1 10
	Boston,	Concord,	20	75
New York & New England,	Worcester,	Hubbardston,	20	1 00
	Boston,	Walpole,	19	*1 00
	"	Norfolk,	23	*1 20
Old Colony,	Providence,	Coventry,	18	*1 00
	Somerset,	Mansfield,	20	75
	"	Easton,	20	1 00
	Boston,	Brockton,	20	80
	"	Stoughton,	19	90
	"	Cohasset,	22	1 00
	Walpole,	Southboro',	19	1 00
	S. Framingham,	Carlisle,	20	1 00

\* Net ton.

Rates given by rival companies acting under ruinous competition are of no value as standards of comparison. The consumer has a right to the benefit of such competition while it exists, even if one of the companies has become reckless through bankruptcy, or has become bankrupt in its reckless contest. And the respondents have no right to add one cent to the "reasonable rates" secured by law, in order to shut the consumer out from this advantage, however circuitous the route may be by which the low charges from the mine are secured. But the consumer has no right to demand unreasonably low rates from the company that directly supplies him. He cannot demand that proper rates shall be cut down so as to be in proportion with rates which have been fixed on other roads under fierce competition, and which have helped to bankrupt one of those roads.

The petitioners evidently rely mainly upon the rate fixed by the Board under the peculiar provisions of chapter 338 of 1885, for coal transported over the Housatonic Railroad from Pittsfield to Great

Barrington, twenty-three miles. The petitioners, misled probably by an erroneous report, state this as sixty-five cents, but it was really fixed at seventy-five. It is also stated in the order of this Board that "said charges and rates are for cargo lots of not less than forty tons, and twenty per cent. may be added for car-load lots of less than forty tons" (Seventeenth Annual Report, p. 149), so that the rate for single car loads between the points named is ninety cents.

But if this rate were lower than it is it could not be taken as a fair standard of comparison for rates to be fixed by the directors of other companies. The rate from Bridgeport to Great Barrington and other points in the valley was, after a hearing, fixed by the railroad company at one dollar and a half, — a rate satisfactory to the consumers and to the Board. But the people desired the advantage of competition in the sale of different kinds of coal and at different points, and objected to having such rates as would give a monopoly to one place, with a possible overcharge for the coal itself. The rates of freight by other routes were fixed with some regard to the Bridgeport rate fixed from Bridgeport, — a low rate which the Board had not recommended. But the position of the Board in fixing rates for the Housatonic Railroad was wholly exceptional and anomalous. We have often had occasion to say, in deciding petitions like the present, that it is not enough to warrant our interposition, that we think it would be wise and expedient to reduce rates. It must be shown that they are so unreasonable and excessive as to warrant an appeal to the courts, or to the General Court, if our recommendation is disregarded. Up to that limit the directors are the proper parties to fix rates. The Board has more than once expressed the opinion that it would be wise in this manufacturing State, and especially in a county situated as Berkshire is, to carry coal for something like the simple cost of carrying it, trusting to the resulting increase of manufactures, of population and of general traffic for an indirect profit. But in this case, and in like cases, we do not feel at liberty to give a formal recommendation to that effect, to be followed in case of need by an appeal to the General Court. Nor did the Board in its "recommendation" to the Housatonic Railroad Company take any such ground.

But when, under the peculiar circumstances of the case, the Board was substituted by legislative power for the directors, we were at liberty, or rather we were bound to exercise a wider discretion as to rates than if we were dealing with a company in a normal condition. The rates fixed by the Board are such as we think it wise for all railroad companies to adopt. But it does not follow that it would be right to enforce them against all companies. In the present case we should be glad if the former arguments of the Board, or any other arguments, had persuaded the directors to make a further reduction

of the rates in question. But we cannot say that the rate of ninety cents is unreasonable, or so excessive as to call for a formal recommendation by the Board. No question has been raised in this case as to "cargo rates."

By the Board,

THOMAS RUSSELL, *Chairman.*

MARCH 2, 1886.

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E. L. ALEXANDER AND OTHER RESIDENTS OF MALDEN  
v. BOSTON & MAINE RAILROAD.

Some citizens of Malden make various complaints against the management of the Boston & Maine Railroad. Several witnesses were heard in support of these complaints, and an equal number in defence.

Malden Centre is five miles from Boston. There are eighty-six trains running daily on the two branches of the road, between the two cities. It is admitted that the trains are sufficient in number, that they are run at satisfactory hours and that Malden owes its remarkable growth, in part, to its excellent and almost excessive train-service. Numerous objections are made to the manner of operation.

1. It is said that trains frequently are run by the station. No one can imagine that this is done in accordance with the wish of the managers. Such a practice must be objectionable to them because of the cost, the loss of time and the awkwardness of the thing. It will happen sometimes, as long as trains are run by mere human beings. An occasional error of this kind, if noticed at all, should be reported at once to the general manager. If not reported promptly it can neither be proved nor disproved, nor explained. The only state of things which could make such mistakes the foundation of a formal complaint here is their habitual occurrence, — so frequently as to show that the train-service was generally poor, or, to use a common phrase, "demoralized." This is not alleged in regard to the Boston & Maine Railroad; it is disproved by many witnesses and by our own personal knowledge of its operation; and it is also disproved by the general record, showing a freedom from accident which can only be found on a well-managed road.

2. It is said that express trains are run, at high speed, by trains standing at a station to receive or discharge passengers. This is a dangerous practice. The Board has tried in vain to have it forbidden by law. The Legislature has preferred to leave the matter to the prudence and self-interest of each railroad company. No company claims that it is a safe mode of operating, and the Boston & Maine



has a rule forbidding it. This rule is, no doubt, sometimes violated on this as on every road. When such a violation is observed it will be a service to the managers and to the general public if it is promptly reported. This course was pursued by one of the witnesses, and after doing his duty in this respect he observed that, for some time, there was no repetition of the wrong. It is not good service either to the railroad managers or to the public to wait a long time and then to bring a general charge, without specifications of time and without possible identification of the parties. In such case the Board can only give a general recommendation to the company to enforce its rules which, for its own sake, it is already and always desirous of enforcing.

3. Complaint is made of noisy and disorderly conduct in the cars, annoying to passengers and not properly repressed by train-men. This is primarily the fault not of the company but of its customers, and of a portion of the community served by the road. But it is the duty of the managers to furnish reasonable protection to their passengers; and if they are especially liable to this annoyance on any particular part of the road, or at any special time, extra force should be employed for the purpose. The law upon this subject was formerly defective, and attempts to punish disorderly conduct failed in court. Probably some of the cases testified to date back to this time. The defect has been supplied by stringent legislation, and it is the duty of railroad managers to prosecute offenders. It is the duty also of well-disposed passengers to aid such prosecutions by their testimony and not to allow their sympathy to obstruct the course of justice. The Boston & Maine officials have tried to enforce the law; indeed, one complaint against them is that within three years sixty-four passengers have been ejected or arrested at Malden. In other words, they have done their duty. These passengers could not have been arrested at Boston, for they had done nothing to make themselves liable. The complaint is, in part, that they were not arrested before they had violated any law.

4. It is said that the 7.21 P.M. train for Boston, sometimes used as a theatre train, is frequently late; this is true and it is unavoidable. This is an accommodation train for passengers, stopping at a great number of stations, in order to afford facilities to the people between Georgetown and Malden. This train must be irregular; it cannot be run with the punctuality of an express train. But the people of Malden would not be aggrieved if this train made no stop at their station. They are accommodated by a 6.55 P.M. train, which is convenient for theatre-goers. They cannot demand a train which shall always enable them to reach the theatre without losing a few minutes and which shall never be late.

One special charge of irregularity was explained. A train due to leave Boston at 11.15 P.M. was twenty minutes late in starting. The reason was that an express train had been delayed in arriving, by an unavoidable accident. This train was obliged to coal before going out and the local train was held back until the express had left, instead of being sent in advance of the express. The manager deserves credit and not blame for his care for the lives of his suburban passengers.

5. Complaint is made of the style of cars and that old cars are used on this portion of the road. The public have a right to all the accommodations required by law, and to safe and comfortable conveyance. If cars are not clean, properly warmed and ventilated, that is a proper subject of complaint; but fresh paint and gilding and elegance of upholstery are matters not of right to the public but of detail for the managers. All railroad companies must have old cars. When they lose their original freshness no economical company uses them at once for fuel. So long as they are safe and comfortable, they are kept in service, — sometimes as spare cars for extra service, often for suburban service. It is hardly necessary to give the reasons why they are so used and why a larger number of old cars are placarded "Malden," rather than "Portland" or "Fabyan's." Safety and comfort are all that the public can demand, and we should go beyond our province if we should advise the directors as to the disposition of their newest and most elegant cars; or if we should try to fix the precise time for abandoning cars that have ceased to be beautiful and attractive.

6. Complaint is made of insufficient room for passengers. Part of the complaint is founded on the fact that passengers for Malden are apt to crowd the rear car and passengers from Malden crowd the front car, so that several persons are often standing without need. The statute as well as the common law requires "reasonable accommodations" for passengers. No one will doubt that as a general rule seats are included in this requirement. No one will claim that there may not be occasions when it would be unreasonable to expect seats for all passengers. It would be folly to keep fifty or a hundred cars standing idle for a year because they might be needed on some great holiday. On such occasions passengers expect some discomfort and generally bear it with good humor. So it may happen on any day or hour that an unusual throng of passengers may crowd a train, without fault on the part of any one; but when a train is repeatedly and habitually so crowded that any number of passengers are obliged to stand, it is fair ground for complaint. The operators of roads should provide seats for all passengers that they expect. When, as a rule, passengers are obliged to stand, the managers have failed of their



duty. They should furnish seats for all, although one car may start less than half filled. The comparison with street railways proves nothing, for this reason, among others, that street railways are limited in the number of their cars by the orders of municipal authorities and by the capacity of the streets. The Board recommends to all managers to take such action as will secure, habitually, seats for every passenger taking their cars upon any ordinary occasion. We learn, with pleasure, that thirty new cars have been ordered for the Boston & Maine Railroad.

7. Strong complaint was made as to the dangerous nature of certain level crossings. This is the most important subject which the petitioners have brought before us. The general views of the Board as to the danger of grade crossings are well known. We hesitate on a complaint of this kind to express an opinion as to any one crossing, on which we may have to act formally. This is not the way to deal with the subject. On this petition we could at most give a recommendation. By a petition to the County Commissioners, and in case of need by appeal to this Board, any level crossing may, in a proper case, be actually abolished. The city can ask for separation of grades in any case. Where the cost of separation is moderate, any twenty voters of the county can petition. If the citizens of Malden regard any crossing as specially dangerous, their course is to petition for its abolition. This hearing will have been valuable if it results in such action. We were glad to learn that the city officials and the railroad managers are considering a plan for abolishing some of the worst of these crossings.

Finally, we would recommend to the directors that they seriously consider the question of gating their cars, and also of protecting their tracks at Malden station by a division fence. Each of these measures would do much for the protection of passengers.

By the Board,

THOMAS RUSSELL, *Chairman*.

FEB. 9, 1886.

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HENRY A. WHITNEY AND 105 OTHERS *v.* THE MILFORD  
& WOONSOCKET RAILROAD COMPANY.

This was a complaint alleging excessive fares between Bellingham and Milford, and between Bellingham and Franklin, on the Milford & Woonsocket Railroad, which operates also the Milford, Franklin & Providence Railroad. The distance from Bellingham to Milford is about four miles; from Bellingham to Franklin, about five miles.

The fares are as follows : Between Bellingham and Milford, single ticket, 20 cents ; five trips, 75 cents ; 20 trips, \$3 ; one month, \$5.25 ; school children, one month, \$3. Between Bellingham and Franklin the several rates are the same.

The Commissioners decide as follows : It appears that during the last year the operating expenses of the company exceeded its earnings by \$11,000. The passenger receipts from Bellingham station amount to \$90 per month, and there is no freight traffic. Every railroad company is bound to furnish reasonable facilities to the public, and to furnish them at reasonable rates. But the question, what rates are reasonable, depends upon the circumstances of each case. It cannot be said that any rate per mile is fair for all railroads. It is true that services must sometimes be rendered for a community which taken by themselves are not remunerative, because the franchise is taken as a whole. But here the whole franchise is unremunerative. And the petitioners have no equitable claim to have the annual loss increased at which this company serves them and others. It is suggested, and it is probably true, that a decrease of fares would increase traffic. But it is by no means probable that it would so increase receipts as to make them equal the cost of operation ; and a reduction at this place would compel reduction elsewhere on the road. This seems to the Board to be a case where, owing to the slight amount of traffic, exceptional rates of fare may justly be enforced. In like cases the people have sometimes agreed in advance to pay extraordinary fares, or to guarantee the company against loss. Such an agreement would have been gladly made if it had been necessary to insure the building of the road. Even at the high rates now exacted, the community gain while the stockholders lose by the operation of the railroad ; and the Board does not feel called upon to make a recommendation which would add to that loss.

A complaint was made at the hearing, which was not embraced in the petition, viz., that passengers, including ladies, were obliged to ride in a smoking car. Upon inquiry it appeared that a "combination car," formerly used as a "smoker" and for express purposes, was employed on the road because there were not passengers enough to fill a longer car. Smoking is not now allowed in it ; nor is there any trace of its former use. Indeed, the Commissioners rode to Bellingham in this car without suspecting it had ever been used by smokers. It is not reasonable to object to this piece of economy, nor to require the use of an unnecessary car, simply to avoid the name of a smoking car, or to add dignity to the car service of the road.

By the Board,

THOMAS RUSSELL, *Chairman.*

JOHN S. BLAKIE AND OTHERS, CITIZENS OF HYDE PARK, *v.* NEW YORK & NEW ENGLAND RAILROAD COMPANY.

The petitioners complain that two express trains which have hitherto, for more than five years, made stops at Hyde Park, have now discontinued these stops; and they claim that this is a violation of sect. 156 of chap. 112, Public Statutes. The law is as follows:—

“A railroad corporation which has established and maintained throughout the year, for five consecutive years, a passenger station at a point upon its road, shall not abandon such station, nor substantially diminish the accommodations furnished by the stopping of trains thereat, as compared with that furnished at other stations on the same road,” etc.

The fact is admitted, and it is not denied, that these were convenient and favorite trains. One left Hyde Park for Boston at 9.18 A. M.; the other left Boston at 3.30 P. M. In place of the last-named train, the time of a former train has been changed so that it leaves Boston five minutes after the express train, viz., at 3.35, reaching Hyde Park at 4.02 P. M. The trains now running to and from Hyde Park are as follows:—

Outward trains at 6, 7, 8, 9.30, 11 A. M.; 12.15, 1, 1.35, 2.30, 3.35, 4.30, 5.15, 5.35, 5.45, 6, 6.10, 6.35, 7.30, 9.15, 10, 11.15 P. M. Inward trains at 6.13, 6.48, 7.13, 7.45, 7.50, 8.08, 8.23, 8.53, 11.03, 11.48, 1.03, 1.43, 2.18, 3.33, 4.48, 5.18, 6.33, 7.08, 8.19, 9.19, 10.23. Of these the following-named trains are express: 7.45 A. M., 8.23 A. M. and 1.43 P. M. to Boston; 5.35 P. M. and 6 P. M. from Boston.

The reason for discontinuing the stopping of the outward train was the need of more time to insure close connections at Blackstone and at other important junction points. As a rule, such connections were made, but the failures were frequent and annoying to many passengers. This was also a mail train. The reason for dispensing with a stop at Hyde Park, rather than at some other point beyond this station, was the opinion that this station, although the most important one between the termini of the road, could better afford to lose one of its 42 trains than the other stations could afford to lose one of their few trains.

The reason for discontinuing the stop of the 9.18 A. M. train was the need of shortening the time for a through train coming from Wilimantic, a point 86 miles distant, and bringing through passengers from more distant points. These are good railroad reasons. The

object to be gained in both cases was not a saving or a profit to the railroad company, but a reasonable accommodation to the travelling public. The real question is not between the people of Hyde Park and the managers of this railroad, but between different portions of the public. One portion of a community must sometimes submit to inconvenience or loss of facilities in order that the others may have reasonable accommodation. It was once stated to the Board by a witness that every train should be express, and also that all trains should stop at every station on the road. A like demand is often made, not by one person, but by different sets of persons. In practice, it is not easy to regulate the respective rights of people at different stations. It seems to us that here the managers have endeavored to act fairly, and that they have done no injustice. In regard to the afternoon train, especially, there would have been grave cause for complaint if a stop had been persisted in which caused frequent failure to make important connections.

The claim for the petitioners is founded on a rigid, and, as we think, a mistaken construction of the law. It is said that the Hyde Park stops are reduced by two; and that the stops at other stations are not reduced. Therefore, the accommodation is diminished, "as compared with that furnished at other stations;" and, as these were favorite trains, the diminution is substantial. This is supposed to be almost a mathematical demonstration of violated law. We do not so understand the statute. It is not said that the amount of accommodation at one station shall not be reduced without a corresponding reduction at all other stations. The main object of the Act of 1865 (now sect. 156 of chap. 112) was to prevent the abandonment of stations to the unfair injury of persons who had made investments and arrangements in faith of their continuance. To prevent evasion of this prohibition, and to prevent the like evil of a great diminution of service, the clause as to substantial diminution was added. And to avoid too severe a restriction on the authority of managers, this was qualified by the reference to other stations. Without this last clause, a general reduction of passenger business could not be followed by a general reduction of passenger trains. The Board has no reason to believe that the Legislature intended by an iron rule to direct that every train which had been run for five years should be run forever, even if by other trains necessarily placed on the road such running had become needless or dangerous, nor that every stop which had been made for that period should be made forever, without regard to the needs or rights of travellers from other places. The words may be construed as forbidding such substantial diminution of accommodation at the station as will reduce it below that generally furnished



at other stations. Without positively accepting this interpretation of the clause, it is sufficient to say that it does not require that the amount of accommodation furnished at each station shall always bear the same ratio to every other, or that the facilities at one station may not for good reasons be so reduced that they shall be less than those of another station. Any other view of the statute would often result in great injustice. A village which had grown to be a city could not have its just demands for railroad facilities met without infringing on the statute rights of some place that had remained a village. The additional trains absolutely required for the city might compel the displacement of a train in the smaller place. The law cannot be intended to forbid this.

We give more force to the word "substantially" than has been given to it by the petitioners. As we have said before, "The word 'substantially' has not a definite meaning. It is a relative term, and, in considering whether the accommodations at a station are substantially diminished, the business of the whole road and the objects sought in operating it are to be considered. We are also to consider how many persons are incommoded by a change, and how much they are incommoded, and we are not wholly to forget the accommodations furnished by the change to other travellers and to the business community by the carrying of letters."

To operate a railroad by statute is difficult. It would become more difficult if an unbending rule required that a facility once furnished should always be continued, without regard to circumstances, or that, if withdrawn from one station, it should, therefore, be withdrawn from all.

In considering the question whether this case shows a violation of law, we take into view all the facts, and among them the important fact that Hyde Park still has a very great number of trains with a fair number of express trains. Still more is this fact important as bearing upon the question whether this petition could be sustained as a request for a recommendation to give reasonable facilities. And in that view the accommodation furnished by the Boston & Providence Railroad to a portion of this large and thriving town is to be considered. The town is growing rapidly. But the Boston & Providence Railroad runs 43 trains daily, so that this town of 9,000 inhabitants has 85 trains daily, of which nine are express trains. We cannot say that the railroad managers have failed to give reasonable accommodation; and the Board declines to take any action on this petition. So far as this declaration is founded on our view of the law, we are glad that our views can be revised by a direct application to the Supreme Court.



If at any time, by a new arrangement with connecting roads, the managers of this road can be enabled to make the desired stops or either of them, without interfering with the fair rights of passengers, we do not doubt that they will be glad to give the desired accommodation to a place which furnishes them so many customers.

By the Board,

THOMAS RUSSELL, *Chairman.*

AUG. 8, 1886.

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#### SELECTMEN OF HANOVER *v.* HANOVER BRANCH RAILROAD COMPANY.

A number of the inhabitants (represented officially by the selectmen of Hanover) ask that the train now leaving Rockland for North Abington at 8.15 A. M., and connecting with the fast train of the Old Colony Railroad for Boston, may leave Hanover at 8 A. M., or thereabouts, so as to furnish accommodations for the stations south of Rockland. This could be done without any additional engine, car or train hand, by using an engine which now stands idle for two hours. It is asked for as a convenience, and if it is a reasonable convenience, it is not necessary to prove that it will increase the profits of the company. But all railroad experience shows that increased accommodation does increase travel; and the history of the fast train, with which this is to connect, illustrates this fact.

The railroad is doing a profitable business, and a fair portion of this business is furnished by Hanover Station. The convenience asked is a great one; the cost of granting it will be slight and will soon be paid by increased travel. Whether so paid or not, it is a case where a proper regard for public needs calls for action by the directors. It was, indeed, suggested that a noon train was greatly needed, and that the granting of this petition might interfere with that. But the Board cannot decline to recommend a desirable train, which is petitioned for, because such action may interfere with a train which is not petitioned for. And the Board adjudges that the petition in this case is well founded, and recommends that the train desired shall promptly be put in operation.

For the Board,

THOMAS RUSSELL, *Chairman.*

SEPT. 6, 1886.

SELECTMEN OF AMHERST *v.* NEW LONDON NORTHERN RAILROAD COMPANY.

The selectmen, acting under a vote of the town, ask a recommendation for additional facilities at South Amherst. The people desire a better station; the stopping of all passenger trains when passengers desire to be taken or left at this place; the furnishing of freight facilities; the sale of tickets for and at the station, and the placing of South Amherst on the time-table. The road is operated by the Central Vermont Railroad Company.

South Amherst is a pleasant and thriving village of 500 inhabitants, with a church, post-office and country store. It is about three miles from Amherst and about three-quarters of a mile from South Amherst station. When the Amherst & Belchertown Railroad was built (the franchises and duties of which have passed to the New London Northern Railroad Company), the town voted (1) to give the land taken from the Town Farm by the road without compensation, (2) to exempt the company from fencing within the farm limits, (3) to grant the use of half an acre of land for a depot. The company by its acts accepted this offer and built a station, which was used for many years. It was then removed, but was restored upon the suggestion of the Railroad Commissioners that under section 156, chapter 112, Public Statutes, the right to a station had become vested.

The general rule of law insures for the people on a railroad reasonable facilities for passenger and freight traffic, whether the business at a particular point is or is not remunerative. The furnishing of such facilities, even at a loss, is part of the price paid for a franchise. And this applies especially to railroads like this, whose termini are in other States, and whose managers are likely to be interested in through traffic to the neglect of local interests. In this case the claim of the people is strengthened by the grant of the town. Such a grant, when accepted, is an executed contract, and the corporation accepting a grant binds itself to fulfil the promise implied by such acceptance. The railroad managers in this case contend that the receipts at South Amherst are so insignificant as to show that the demand for any increase of facilities is unreasonable. The amount is indeed ludicrously small, but the disuse of this station is explained by the fact that everything is done to discourage its use and to repel traffic. Especially is it to be noted that South Amherst is not acknowledged as a station in any advertisement or time-table. Whether any train will stop there is a question to be settled by inquiry, with probably different and doubtful answers. To illustrate this, the Commissioners were unable to learn, without special corre-

spondence with headquarters, whether the train which they desired to take would or would not stop at this point. And, in fact, they were obliged to arrange for a stop at Amherst, and for reaching South Amherst by private conveyance. It is plain that a traveller would take a ticket to Amherst, of which he was sure, rather than to South Amherst, of which he was not sure. The grievance is not only that all trains do not stop at South Amherst, but that there is no notice given as to the trains which will stop there. And this is not only a substantial grievance, but an answer to the argument that business does not warrant an increase of facilities. For many years no attempt has been made to meet the just demands and supply the reasonable wants of this community. And no argument can be founded on the absence of traffic when traffic has been persistently discouraged.

The petitioners especially desire that the "mail trains," so called, shall stop. These are through trains as well as fast trains, and it is desirable that passengers coming from or going to distant points should have a chance to use them, if their occasional stopping for one or two passengers would not interfere with the convenience of a larger number. If, indeed, it were shown that, by using this as a flag station for all trains, there would be danger of occasionally breaking mail connections for a large number of passengers, then a case would be shown where the interests of the few should yield to the rights of the many, and a stop should be refused, not for the sake of the railroad company, but for the sake of the public. But this was not shown; and the corporation, having all the facts in its possession, did not attempt to prove that the short time required for an occasional stop could not be easily made up.

There are said to be (for the testimony was slight) 17 flag or signal stations on the road. Stops of the "mail trains" are made, as it is believed, at stations less important than South Amherst. And upon the testimony as it was left, there was not sufficient reason for refusing a stop when desired at this station. And it will be borne in mind, that while trains are not stopped, and while the trains which will stop are not specified, passengers dare not depend upon the stopping of any train. By stopping all, the company will relieve the community from this trouble.

As to the other cause of complaint, the Board makes no formal recommendation. It is our belief that the erection of a more commodious station would finally result in increased traffic, and in profit to the company; but this is a commercial question, not a question of right. We cannot say that the business warrants the employment of a station agent to sell tickets, although tickets to and from South Amherst should be sold at proper rates at the Amherst station. Nor does it seem that the freight business at South Amherst would war-

rant us in recommending provision for it. But for the reasons given above, the Board adjudges that the complaint is well founded, so far as it refers to the omission of the station from all time-tables and advertisements, and the not stopping of trains thereat, and it recommends that every train be stopped at this station when a passenger desires to take or leave it, and that the name of the station (as a flag station) be set forth in all time-tables.

By the Board,

THOMAS RUSSELL, *Chairman.*

SEPT. 8, 1886.

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### SELECTMEN OF WESTBOROUGH *v.* BOSTON & ALBANY RAILROAD COMPANY.

The petitioners ask a recommendation that by the issue of package tickets or otherwise the fares for persons daily travelling between Westborough and Southville may be materially reduced. About 100 such travellers go from Westborough to Southville to work in a shoe factory, owing to the destruction by fire of a factory in Westborough. Somewhat less than 40 workmen go daily from Southville to Westborough.

The distance is four miles. The amount now paid is \$10.50 for three months. The charge for a single fare is nine cents, and it is not objected to. The price of season tickets is fixed by a sliding scale, the rate per mile being much lower for a long ride than for a short one. The 1,000-mile ticket at the uniform rate of two cents per mile is also much used on this road.

The desire of the people for a reduction is natural, especially in those who on account of their youth receive low wages, so that the fare amounts to a large proportion of their receipts. But to obtain a recommendation it must be shown either that the rate is in itself unreasonably high, or that there is something in this case taking it out of the general rule. Neither in itself nor by comparison with rates on other roads does the price for season tickets seem to be unreasonably high. There is good reason for adopting a higher rate per mile for short distances than for long distances, and this is the general practice on other roads. Indeed, it was admitted to be correct, but it was claimed that the difference made was excessive. It was urged that the average rate for three months' season tickets on the Boston & Albany Road is 64-100 of a cent per mile (for 1885, 67-100), while for this section of the road it is 1 68-100 cents. But to pro-



duce this low average it is necessary to reckon on the rate for long distances where season tickets practically are never used, and for others where very few are used. Under a settled rule, season tickets are offered for routes where no one thinks of using them. It is evident that the petitioners were (very naturally) misled by an item in the annual report of the Boston and Albany Railroad Company, "Average rate of fare per mile for season ticket passengers." But this does not refer, as some other items do, to the average rate of fare received from all passengers. The existence of a large number of nominal rates, which from the nature of the case can never be availed of, does not affect the propriety of actual rates fixed for real travel.

The rate not being unreasonable in itself, the next question is whether there is any reason for taking this section of four miles out of the general rule. In other words, if the rate for this section ought to be reduced, why should it not be on any other like section on this railroad, and on all others maintaining like rates? No such reason has been shown. This case differs entirely from that of a large suburban population, doing business in Boston, and living with their families in the country. Besides the railroad reasons for low rates for suburban travel, this system is in strict accordance with the policy of the State, which has not only permitted, but enjoined, what are popularly called "workingmen's trains," although their benefits are confined to no class.

We do not find that any such system exists in regard to centres of population and business smaller than the metropolis. And the principle on which such a system is favored by the State certainly would not apply to residents of Westborough who work in a smaller place, for whom chiefly this petition is brought before us. The Board does not feel justified in making any recommendation.

By the Board,

THOMAS RUSSELL, *Chairman.*

OCT. 11, 1886.



[F.]

PETITIONS FOR NEW STATIONS AND  
RELOCATION OF STATIONS.

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APPLICATION FOR A NEW STATION AT PIERCE  
STREET ON OLD COLONY RAILROAD.

A. S. Covell and other citizens of Fall River request the Board to recommend to the Old Colony Railroad Company the erection of a new station-house at or near Pierce Street. A view and hearing showed what the Board already knew from observation,—that the Bowenville Station, which was sufficient for the wants of the suburbs of a growing town, has become altogether inadequate for the needs of a central point in a great and busy city. It appeared that two-thirds of the railroad business of Fall River is done at this station, and it is said to be the most important one out of Boston. Its importance is increased by the growth of the city northward, and by the fact that this growth includes a large proportion of persons likely to use the railroad. Not only is the station too small for comfort and convenience, but there are disadvantages in its situation and approaches.

The president and a resident director of the company concurred with the views of the petitioners, and stated that the matter had been fully considered by their Board. They recognize the fact that the station, although twice enlarged, is far too small for the needs of the people, and they desire to build a station-house like the one in process of erection at New Bedford, 150 feet long, 45 feet broad, and to be finished in a tasteful manner. The company owns a lot of land on Pierce Street, and has obtained the offer of an adjoining estate, so that there will be ample room for the building, with safe and convenient approaches, at this place.

The only reason for not constructing this station is the claim that Pierce Street, which runs east and west up to the railroad location, does legally extend across the location, and will, in fact, be so con-

structed and used. This would create a grade crossing of the most dangerous kind, adjoining a busy station, extending "across its mouth," and made more dangerous by the large amount of switching required at this point by the needs of traffic.

The legal position of the extension of Pierce Street is as follows : It was laid out with a level crossing over the railroad in 1873-74, by the mayor and aldermen of Fall River, with the assent of the County Commissioners, who then had authority to order such crossings without the concurrence of this Board. It has never been constructed across the railroad. Certain irregularities are alleged to have vitiated the proceedings, but the period of six years fixed by statute (chap. 186, sect. 11), for setting them aside by *certiorari*, has long since expired. The city holds that the extension exists as a matter of law, and that it cannot be discontinued without municipal action and the payment of damages. In fact, a proceeding by way of information is now pending in the Supreme Court, designed to ascertain and enforce the rights of the public to use this street.

Whether the legal question can be decided in this way, or how it will finally be decided, we cannot tell. Nor have we any jurisdiction as to this alleged grade crossing, if it shall prove to have been established before 1876. But when we are asked to advise the erection of a large station with its entrance upon such a crossing, it is our right and our duty to refuse a recommendation. Indeed, if the Old Colony company were about to place a station there, we should probably feel bound to remonstrate against the creation of such a peril to the lives of the community. After dealing with the crossing of the Boston & Albany Railroad over Kneeland Street in Boston, and after hearing complaints as to like crossings in Worcester and Springfield, we could not see such an error committed with indifference. In this case the evil would be aggravated by the fact that if the station were once placed on the crossing, there would be no remedy. The lay of the land forbids a separation of grades ; and the "dangerous nuisance," if created, would never be abated. In order to recommend the erection of a station at this point, we must be satisfied that Pierce Street is not legally laid out across the railroad, and will not, in fact, be so extended. This we can by no means assume.

But the spot in question is the only available place for a new station. Not only is it the best in every way, but there is no assurance that any other fit place can be had. The site of the present station is by universal consent too small ; and, without considering other objections, there is no reason to believe that the company can obtain the land requisite for its enlargement. To do this it would be necessary to take real estate now occupied by the street-railway company ; and this would seem to be a harsh application of the right of eminent

domain. It cannot be assumed that an application for this land would be granted.

Finally, it is unnecessary to recommend to the directors of the company to erect a commodious station as soon as they can do so with safety to the community; for they seem to desire to do this as much as the public desire to have it done. And while we regret the inconvenience which the people of this thriving city are now suffering, we cannot advise the placing of such a station at a point where a level crossing is threatened, endangering the public who are invited to use the station, and enduring for all time.

By the Board,

THOMAS RUSSELL, *Chairman.*

JAN. 13, 1886.

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#### PETITION FOR RELOCATION OF CYPRESS STREET STATION ON BOSTON AND ALBANY RAILROAD.

The Boston & Albany Railroad Company ask the assent of this Board to a relocation of Cypress Street station on the Brookline Branch. The company took no part in the hearing, signing the petition because that is the only way of bringing the question before the Board, but not joining in the discussion, which widely divides the people of the town. The selectmen have decided in favor of relocation at a point 875 feet west of the present site.

The chief object of the petitioners appeared to be to encourage the growth of a sparsely inhabited part of Brookline, and thus add to the valuation of the town. It seems to us that many of the witnesses, public spirited, fair-minded and intelligent as they are, overestimated the weight to which this argument is entitled on a petition for relocating a station. One witness stated as a reason for relocation that the land about the station was well filled with houses, and that it should therefore be removed to vacant land. This is not the policy of the State. Nor is this given as a fair specimen of the petitioners' views. But the statement illustrates the meaning of this movement, and shows that there is a tendency to forget the rights of those who have built near a station because of its existence.

This is not a simple railroad problem as to the spot where the station should have been placed, or what spot would best suit railroad interests or town interests now. Questions of good faith and of acquired rights are to be considered. If it could be demonstrated that property near the present station would be depreciated \$100,000, and

that property elsewhere would be increased in value by \$300,000, it would not follow as a matter of course that relocation should be granted. Even the gain of the greater number must sometimes yield to the rights of the few. The equitable rights, even if they are not strictly vested rights, of the minority must in some cases prevail over the desires and interests of the majority. Those who invest their money near a station acquire in time legal rights in its continuance, and a moral right that it shall not be relocated at a distant point without pressing need. The same reasons that forbid relocation without the assent of this Board require that the Board should refuse it unless a strong case is proved. We cannot take a thousand dollars from one man simply for the purpose of giving three thousand dollars, or five thousand, to another, nor lengthen his necessary walk solely to shorten that of another.

This is not a station that has failed to attract population. It has drawn about it a little community who would be subjected to inconvenience and loss by the proposed change. They would suffer more, because very few of them own horses or carriages. They would have more right to complain, if the change were made, from the fact that this station has been built and maintained in obedience to a special law. We have held with some hesitation that this is not absolutely a legal objection to relocation. But it strengthens the case of the remonstrants that the statutes give assurance that the station will be continued, and that when a train was withdrawn it was promptly restored as the result of official action.

The Brookline petitioners in aid seem to us to have mistaken their case and their remedy. They have, perhaps, shown the need of an additional station; and when the managers of the Boston & Albany are asked for one, they will be very likely to grant it, especially when their project of a circuit line is carried out. The Brookline petitioners have certainly mistaken their remedy if they suppose that a case for relocation can be made out by proof that the present station is filthy and unwholesome, or that it is locked up and untended during a great part of the time. A petition cannot be sustained by testimony that the petitioning corporation neglects its duty to the public. The evidence on these points may help to show why the station is not used more freely, and it certainly explains the motives of many of the petitioners. But the remedy for the evils complained of is not to deprive this neighborhood of its present facilities. The proper course would have been to apply to the railroad officials, and, in case of need, to this Board. Now that the matter has been brought to the attention of the managers, they probably will not wait for suggestions from the Board, or for petitions from the people, but will at once attend to it of their own motion. This company is not in the habit of neglecting



its stations; and many were led to ask for the change, in hope of an elegant structure like those recently placed elsewhere on the Boston & Albany road.

The strongest argument for the petition is the need of moving from the present spot when a bridge shall have been built over the railroad, and the difficulty of finding a fit place without going to the proposed location. But the inconvenience attending the reconstruction of this station does not warrant its proposed removal, in the face of a remonstrance made by the great body of those who use it, and who will have to bear a full share of the expected inconvenience.

The Board declines to assent to the proposed relocation.

By the Board,

THOMAS RUSSELL, *Chairman.*

FEB. 5, 1886.

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SELECTMEN OF WHATELY, PETITIONERS FOR A STATION ON THE NEW HAVEN & NORTHAMPTON RAILROAD.

The selectmen and the people of Whately ask that the Board recommend the company to establish a passenger station and freight depot on their railroad in the town of Whately. At present the road has no such station, and trains run through the whole length of the town without stopping, making no stop for a space in this and in neighboring towns of about eleven miles. The town has a population of about 1,000; it is devoted to agriculture, and exports a large amount of apples, tobacco and other products of the soil. The Connecticut River Railroad Company has a station in the easterly part of the town at a point not more than sixty rods from the road of the New Haven & Northampton Company.

The chief object of the petitioners in asking for facilities from the New Haven & Northampton Company is to avail themselves of the connections made by that road, both northerly and southerly, which are not afforded by the Connecticut River Railroad. A choice of markets and a choice of routes would thus be afforded. Produce, including early vegetables, could be conveyed directly by one railroad that will not bear the cost and delay of transmission over two roads, which is now necessary in order to reach a market. The same thing is true of some articles needed in Whately. They could be brought directly from the place of production. But the necessity of transshipment now forbids their importation or makes it costly. It would



often be an advantage, also, to use one route in going and another in returning, taking advantage of the different hours on the two roads.

These claims of the public are not met by the fact that the Connecticut River road is capable of doing an amount of business at Whately exceeding all that is now done there. It cannot do the business which Whately desires, because it does not run to the points to which the "Canal road" runs. There is new business which the "Canal road" can do, and which the "River road" cannot do. Moreover, this is not a question as to the exigency for constructing a new railroad, but as to the propriety of allowing to the public the use of a railroad already constructed. Even if it were proved that the road ought never to have been extended, it would not follow that the extension ought not to be put to every use of which it is capable.

It is not claimed that the business of this station would render it profitable at once, although it is hoped that traffic would develop in time so as to pay the road. But it is too late to argue that this is of itself an unanswerable objection to the establishment of a station. The reasonable accommodation of the people on the route is part of the price to be paid for the franchise of a railroad. Proof that the business is unprofitable does not relieve a corporation from paying for the land taken. Neither does it remove the burden of meeting the equitable claim for reasonable service.

The probable amount of business should, indeed, have due weight in considering what is reasonable service. But all railroad managers recognize the fact that stations must be maintained and stops must be made, which, of themselves, do not pay expenses.

The Supreme Court of this State has said : —

"If the directors of a railroad were to find it for the interest of the stockholders to refuse to carry any freight or passengers except such as they might take at one end of the road and carry entirely through to the other end, and were to refuse to establish any way-stations or do any way business for that reason, though the road passed for a long distance through a populous part of the State, this would be a case manifestly requiring and authorizing legislative interference. . . . And on the same ground, if they refuse to provide reasonable accommodation for the people of any smaller locality, the Legislature may reasonably alter and modify the discretionary power which the charter confers upon the directors, so as to make the duty to provide the accommodation absolute. *Commonwealth v. Eastern Railroad Company*, 103 Massachusetts, 254."

The case before us well illustrates the views of the court. This road was not built at the suggestion of the Whately people, or of their neighbors. It was designed to secure traffic passing through the tunnel and business going to and from Turner's Falls. But of neces-

sity the road passed through Whately, taking land without the consent of its owners, cutting up their farms without regard to their wishes or interest, and crossing highways in a manner inconvenient to travellers. In obtaining these rights under the general law the railroad managers assumed duties which they have not performed. The people now demand a performance of these duties, and, so far as it is reasonable, the demand should be complied with.

The claim is strengthened by the fact that when land damages were settled, the agent of this company stated as an inducement for moderate demands that a station would be placed in Whately. This was said in good faith, with the expectation that a station, for which land was procured, would be placed there. It further appears that the agent had no right to make any promise on the subject, and that the president carefully refrained from authorizing any such promise. But the accredited agent of the corporation did use the fact as a measure of reducing land damages, and this has some equitable weight in re-enforcing the demand of the people for accommodation.

That claim, however, does not need this aid. The mistake of the railroad managers in such cases is in supposing that the interests of the stockholders are paramount, and that the earning of dividends is the sole object to be sought in operating a road. Our Supreme Court has said more than once that a railroad corporation is created mainly for the public benefit, and only incidentally for its own profit. And because directors are liable to take a wrong view of their duties the State reserves full control, and delegates to its agents the power of supervising the operation of these corporations.

The Board deems that the establishment of a station at Whately, with facilities for passenger and freight business, is reasonable and expedient to promote the convenience and accommodation of the public, and recommends that as soon as may be such a station shall be established and maintained.

By the Board,

THOMAS RUSSELL, *Chairman*.

AUG. 23, 1886.

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JOHN H. PAINE AND OTHERS *v.* NEW YORK AND  
NEW ENGLAND RAILROAD COMPANY.

The petitioners, who use the Forest Avenue station on the New York & New England Railroad, complain that the accommodations furnished at this station are inadequate and unsuitable, and ask a

recommendation that a proper station house be erected. Nothing but a shed is now furnished for passengers, and as it is not cared for by an agent it is generally in an unfit condition for use. The numerous passengers who are at this station making 16,000 trips in a year, and who have been drawn to this spot by the promises of the railroad managers, are fairly entitled to better accommodations. The evidence at a former hearing upon the proposed withdrawal of trains answers all the objections that can be made to the erection and maintenance of a proper station house. It is true that the short distance from Boston and the consequently low fare keep down the receipts. It is true also that the want of accommodations and the fear of losing them altogether check the growth of the community that resort to this station. But, as we have often had occasion to say, a railroad corporation takes its franchise as a whole. It cannot take the benefits and shirk the burdens that are imposed when a charter is accepted. One of these burdens is the affording of reasonable accommodations to residents on the line, even where a particular track, a stop, or even a station may not be of itself remunerative. But this is especially the case where, as in this case, promises were given and inducements were held out for investing in land and for building houses, in the faith of proper and continued railroad facilities. Here it was especially agreed in a deed of gift that a passenger station should be established and kept up. The policy may have been unwise, and a new management may modify it, but not at the cost of the equitable rights of residents who have been attracted to the place by that policy. This would be unwise and unfair. The people living near Forest Avenue are entitled to a station; and, therefore, they are entitled to a decent and convenient station house, and we recommend to the president and directors of the company that they establish and maintain such a station house.

By the Board,

THOMAS RUSSELL, *Chairman.*

JUNE 14, 1886.

BOARD OF RAILROAD COMMISSIONERS,  
NO. 20 BEACON STREET,  
BOSTON, June 16, 1886.

J. W. PERKINS, *Assistant to President of New York & New England Railroad Company.*

DEAR SIR:—The Board has received your acknowledgment of its recommendation that a station house be erected and maintained at Forest Avenue. In reply, you state that after July 1 all stops of trains at this station will be discontinued.

Our communication was addressed to the president and directors of the company, and we await a reply from that body. The course which you propose would be (as appears from the facts set forth in our decision of October 20) an act of grossly bad faith toward the people who have been led to settle and make investments at this place by the implied and expressed promises of the managers of the corporation.

It would also seem like an attempt to punish the petitioners, who, in pursuance of law, have asked us to recommend an increase of accommodations, and who are rebuked by the withdrawal of all accommodations.

The Board will not believe that the directors of the company will pursue this dishonest and vindictive course until we are compelled to believe it by receiving a formal vote to that effect. And we are confident that the directors have not delegated to any official in advance authority to make such an answer to a recommendation of this Board.

Yours truly,

THOMAS RUSSELL, *Chairman.*

[The petitioners then applied to the Legislature, and an act was passed authorizing the Board, after a hearing, to order the railroad company to construct a station at Forest Avenue, if in their judgment the obligations of the company or public exigency required it (Acts of 1886, ch. 350). Hearings were had, and the Board took action as follows ]

COMMONWEALTH OF MASSACHUSETTS,  
BOARD OF RAILROAD COMMISSIONERS,  
BOSTON, July 14, 1886.

*To the President and Directors of the New York and New England Railroad Company.*

Upon the petition of John H. Paine and others, being more than twenty legal voters of Boston, proceeding under chap. 350 of the Acts of 1886, after notice to said company and appearance by its counsel, and after hearing of all parties interested, it appears to the Board that the duties and obligations of said company and the public exigency require that said company construct and maintain upon its railroad, at the place called Forest Avenue Station, a station house reasonably commodious and furnished for the use of passengers, and also stop at said station, both before and after the erection of said station house, the following specified trains: namely, the outward trains now leaving Boston at 7 and 9.30 A. M., 1, 2.30, 5.15, 6.35, 7.30, 9.15 and 11.15 P. M.; and the inward trains leaving Hyde Park at 6.13, 6.48, 7.13 and 8.08 A. M., 1.03, 2.18, 5.18, 7.08 and 10.23 P. M., or

trains corresponding thereto and furnishing substantially the same accommodation.

And said company is hereby ordered to erect and maintain such a station house and to stop as aforesaid such trains.

And it is recommended that a station house, substantially like that at North Webster, on the Norwich & Worcester Railroad, be constructed under the foregoing order, with such variations from said model as may be agreed on by Charles P. Clark, president of the company, and John H. Paine, who heads the petition.

By the Board,

WM. A. CRAFTS, *Clerk.*



[G.]

## EXIGENCY FOR NEW ROADS.

## PETITIONS OF THE BOSTON &amp; LOWELL RAILROAD CORPORATION AND EASTERN RAILROAD COMPANY, RESPECTIVELY, FOR BRANCHES IN SALEM.

The petition of the Boston & Lowell Railroad Corporation, for a certificate of exigency for a branch in Salem leading to several tanneries, presents some novel questions of law. Several citizens petition in aid; and remonstrances were made by the Eastern Railroad Company and by citizens of Salem and Peabody.

The Boston & Lowell Railroad Company succeeds to the special privileges given to the Salem & Lowell Railroad Company by chapter 128 of 1851. Among those rights is the authority to run over the Essex Railroad (now a part of the Eastern Railroad) with its own motive power, and to build branches from the Essex road on land occupied by the Salem & Lowell. Under this power a branch, many years since, was constructed from the Essex Railroad on land now of the Boston & Lowell. An extension of this branch has recently been laid on land owned and occupied by the Boston & Lowell, reaching the border of the canal. The proposed branch extends from the terminus of this extension to the tanneries.

Various legal objections are made to this request: —

1. The jurisdiction of this Board was denied because section 3 of chapter 265 of 1882 says: "The provisions of this act shall not apply to any railroad corporation acting under the authority of a special act of the Legislature." But this clause was only intended to relieve a corporation especially authorized to construct a road from the necessity of applying for a certificate. It does not refer to all corporations created by special act, or existing under special act, but to corporations "acting," *i. e.*, proceeding to construct a road under special act. It was inserted evidently from extra caution. But that it does not refer to such a case as this is plain from the last clause of the sentence: "But the provisions hereof shall apply to any railroad corporation acting under section 139 of chapter 112 of the Public Statutes." This

is the section applicable to all railroad companies seeking to construct branches, whether organized under general law or special charter. Under this section the petitioners apply, having reached the limit fixed by their charter and desiring to go further.

The construction claimed by the remonstrants would give to all chartered railroad companies the power to build at liberty all possible branches and extensions without any decree of exigency from any tribunal; while all new companies are compelled to procure such a decree. It is safe to say that such a proposition could never have received a single vote in either branch of the Legislature.

Finally, the construction now given by the Board has been universally assented to since the passage of the act, and has had the practical approval of eminent counsel representing various railroad companies, including the Boston & Maine Railroad and Eastern Railroad Company.

2. It was argued that the construction of the spur uniting with the branch of the old Salem & Lowell Railroad was an evasion of the purposes of the Act of 1851. For the design of that act was to allow tracks on land of the Salem & Lowell for the transaction of local business. This spur is covered by the letter of the law, and its construction does not seem to contravene its spirit. The railroad company builds where the special law permits, and asks leave to extend where the new law permits; and both extensions are for the same general end,—the giving of better facilities to local business.

3. It is urged that the law (sect. 139) allows branches of the main line and extensions of the main line, but does not allow the extension of a branch already constructed, or a branch of any extension already made. The language of the law does not compel any such narrow construction. The words are: "A railroad corporation after having finished the construction of its main line . . . may build branches or extensions thereof." In common language as applied to the other matters, the branch of a branch is a branch of the main trunk. The extension of a branch becomes a branch or part of a branch of the main line. Certainly it is an extension of it under the doctrine of *South Boston Railroad Co. v. Middlesex Railroad Co.* (121 Mass. 485), where an addition track of the defendant company was held to be an "extension" of its original track, although it was not connected with it except by travelling over the tracks of another railway corporation.

It is said that with this view of the law the power of branching and extending would be unlimited. But under section 139 of chapter 112, before the passage of the "exigency act," this power was practically restricted by no limits except State lines. It needs clear words to show that the Legislature, while giving a ten-mile railroad power to

extend one hundred miles without asking leave of any one, intended to forbid the slightest extension of a branch which was working well, and which by its working had proved the expediency of its extension. The legality of such an extension has heretofore been assumed, and heavy investments have been made upon the faith that they were lawful.

4. A more difficult question is raised by the fact that the initial point of the proposed extension is on a track connecting with the Essex Railroad. It is said that the law giving power to the Salem & Lowell Railroad Company to use the Essex Railroad, and to build branches at its own expense, does not make them branches of the Salem & Lowell, but of the Essex Railroad, so that in effect the petitioners are asking leave to build under the general law a branch of another and (as it happens) a rival railroad. The answer to this is that the proposed tracks are an extension of tracks owned by the petitioners, and connecting over the Essex with the main line of the petitioners' road. And this under the authority cited above (121 Mass.) may be fairly held to be an "extension" of the petitioners' line. A somewhat similar decision was made by the Supreme Court of Missouri in *Atlantic & Pacific R. R. Co. v. St. Louis*, 66 Missouri, 228, where under the authority to construct branches the railroad company was allowed to construct an extension not directly connecting with its main tracks, but starting from a point a little easterly from its terminus. What seems peculiar in the present case grows out of the peculiar legislation of 1851.

The opinion of the Board upon this point is also sustained by the very able opinion of the Supreme Court of Minnesota, in the case of the *Atchison, Topeka & Santa Fé R.R. Co. v. Fletcher*. There a road was held to connect with the Atchison, where it connected through intervening roads leased by the Atchison, and even where there was a missing link between Deming and Benson, a distance of about 174 miles, still as the Atchison had a right to run over this road to the Sonora railway, the Sonora was connected with the Atchison.

Under the authority of the cases cited above, railroad companies have heretofore, with the assent of the Board, but without much discussion of the point, constructed branch tracks running not directly from their main lines, but from tracks which lie out of their location and are owned by other parties, but over which the petitioners had a license to run. In these cases the Board has taken the tracks as it found them existing in fact and operated in fact, and has allowed their extension. It is now urged with much force that where the intervening tracks are used by authority of a statute, the right to an extension is quite as clear as if they were used by virtue of a revocable license. The point has become important, and the Board by assum-

ing jurisdiction presents the question in the most convenient way for obtaining an authoritative decision by the Supreme Court.

The exigency for better railroad facilities is clearly shown by the petitioner, and is admitted by the remonstrants. It is the sort of exigency that recently called for an extension of the Lawrence Branch of the Eastern Railroad in Peabody, viz., "that by giving improved facilities for business the cost of conducting it will be decreased and its prosperity promoted."

The chief objection to the petition lies in the fact that the proposed railroad will cross at grade a busy thoroughfare, called Boston Street, at the foot of a steep hill, the street being occupied by two street-railway companies. The question of allowing a level crossing is not formally before the Board. The assent of the County and the Railroad Commissioners must be had before that can be allowed. But where the situation is such that a grade crossing is the only practicable one, and when the petitioners declare it to be so, the fact must be considered whether there is an exigency for the railroad such as will justify the crossing. It would be worse than idle to grant a certificate knowing that we should impose a condition that would make it useless. In almost any case there are conveniences on the one side to be weighed against inconveniences on the other, and the crossing at a level over the most travelled street in Salem is an inconvenience and something more.

In this case we are not obliged to decide the question, for the Eastern Railroad Company requests an exigency certificate for a branch road from its main line near Mill Street to Proctor's Court, and offers to furnish a portion of the needed facilities without crossing any actually existing street at grade, and also without obstruction to Proctor's Court. The two cases have been heard together. If another road will furnish the required accommodation without the dangerous crossing, there is no exigency for creating the danger. By granting the petition of the Boston & Lowell so far as a route up to Boston Street is concerned, the tanners and curriers on the northerly side of that street will be furnished by it with the needed facilities. The Eastern Railroad extension will supply facilities to all others; and the general public will be saved from the danger of an unusually perilous grade crossing.

It is urged as an objection to the Eastern extension that it will go under Highland Avenue, which will cross it by an overhead bridge. But the Board has long since decided, and the Legislature has practically decided, that such a structure is less dangerous than a grade crossing. This is not an open question to be debated in every case, but a settled fact.

It is also argued that this route would interfere with certain con-



templated improvements in the southerly part of Salem. But these improvements have been contemplated so long without any visible result, that they should not interfere with the practical facilities needed at the present time. And the extension of the railroad is likely to aid the proposed enterprise as much as it will hinder it. The scheme is as old as 1872, when special legislation was obtained to further it. After so long a period we ought not to regard this project as a serious obstacle to a needed improvement, nor to view with much alarm a "paper crossing" over a contemplated street. The city of Salem has not objected to the proposed extension, taking no part in the controversy.

Suggestions were made as to the motives of the Eastern Railroad Company, and it was said that it would never have acted but for the enterprise of the Boston & Lowell. But with such considerations we have nothing to do. The sole question for the Board is how to secure the greatest good for the public with the least harm. If it were shown that the Eastern Railroad Company had neglected its duty to the community, and that it now offers to do its duty, actuated solely by a spirit of rivalry, it should be allowed to perform the offered service if the public will be better accommodated. If the people can lawfully gain anything from the rivalry of two corporations, they have a right to do so. We desire that the public may be served even though it be done from motives "of envy and strife." Motives of railroad managers have no weight except as they may affect their action. If in obedience to this suggestion we should prefer the Boston & Lowell project to the extension of the Eastern, we should expose the people of Salem and Peabody to the lasting perils of a peculiarly dangerous grade crossing, as a punishment for the supposed neglect of their interests in past time by the Eastern Railroad Company.

As to the comparative value of the service which the two companies can render, the Boston & Lowell has had the advantage of being connected with Western lines, enabling it to furnish for East-bound freight through rates for delivery at the mills. But the Eastern managers have distinctly promised the same advantage to their customers, and have made arrangements enabling them to fulfil their engagements. Obtaining a franchise by such a promise, they will keep it. The facilities for shipping the products of manufacture would certainly be as good on the Eastern as on the Boston & Lowell.

A certificate under chapter 265 of 1882 will be issued to the Boston & Lowell corporation for a portion of its route.

A certificate will be issued to the Eastern Railroad Company for the route requested.

By the Board,

THOMAS RUSSELL, *Chairman*.



# NAHANT RAILROAD ASSOCIATION, PETITIONERS FOR A CERTIFICATE OF EXIGENCY FOR A RAILROAD FROM LYNN TO NAHANT.

The Nahant Railroad Association asks for a certificate that public necessity and convenience require the construction of a railroad from Lynn to Nahant. A petition in aid was received from 123 citizens of Lynn. The town of Nahant opposes the project by its selectmen, by remonstrances, and finally by a vote of 94 to 6 in a recent town meeting. This was a full expression of the wishes of the town, which threw only 82 votes at the last State election. It was almost wholly made by constant residents, or, as they are called, "natives," and it included all the tavern-keepers of the place, who are in some sort judges as to the needs of public travel, and who are generally not averse to increasing its facilities.

The main object of the contemplated road is to furnish the general public with an opportunity to enjoy the fresh air and fine scenery of Nahant. It would, of course, give facilities for travel to and from Boston, and it was said that it would open the town to settlement by a new class of residents, working in Lynn and occupying cheap houses in Nahant. But the chief object is to accommodate pleasure travel. This is a lawful cause for exercising the right of eminent domain, as was expressly decided in regard to a public way in the case of *Higginson v. Nahant*, 11 Allen, 530, where a town-way was laid out "with the design to provide access, not for the town merely, but for the public, to places esteemed as pleasing natural scenery."

The chief objection to the project is that it will injure and practically destroy the present approach to Nahant by Long Beach, the only avenue by which its people can drive to the main-land. It seems to us that the petitioners have underrated this inconvenience, while they have greatly overrated the demand for railroad facilities. Their estimate is founded upon the great number of people who now, in the warm season, drive or ride from Lynn to Nahant. But the number who will use a railroad cannot be safely reckoned from the number of those who, on pleasant days, are conveyed in open carriages over one of the most beautiful beaches in New England. The beach, as well as the rocky promontory, is one of the charms of Nahant; and it will cease to be attractive when it is defaced and made dangerous by a steam railroad. We do not believe that the facilities afforded by such a road would compensate for the great injury to be done. The people desire other facilities which will not deprive the public of the health and pleasure which are found by driving over the beach. We believe

that the number of workingmen in Lynn who would seek cheap homes in Nahant has been overestimated. We feel that great weight should be given to the wishes of the community, especially when the proposed railroad terminates in the town. And, above all, we agree with the remonstrants in feeling that the public loss and inconvenience resulting from such a project overbalance any slight accommodation that it would afford. And, therefore, the Board declines to grant the certificate.

THOMAS RUSSELL, *Chairman*.

MARCH 31, 1886.

[H.]

## MISCELLANEOUS.

SELECTMEN OF WAREHAM *v.* ONSET BAY GROVE  
ASSOCIATION AND ITS LESSEE.\*

The selectmen of Wareham complain that the association had constructed, and is operating, a railroad in that town without any lawful authority, and ask the Board to intervene, under the provisions of sect. 15, chap. 112 of the Public Statutes.

The road was constructed wholly on the land of the respondents, from a point near the Old Colony Railroad to a central point in the grove, and is a little over a mile long. It was built in good faith, without any special authority, in the belief that no such authority was needed. It was constructed and equipped for operation by steam power, and is intended, as its managers say, both for freight and passenger traffic.

The law as to railroads for private use is contained in sects. 223 and 224, chap. 112, and is, in brief, as follows: "A person or corporation may construct a railroad for private use *in the transportation of freight*," provided that it shall not be "constructed across or upon a highway, town-way or travelled place without the consent of the . . . selectmen of the town, nor except in a place or manner approved by them." If they consent, they may from time to time regulate the motive power, speed and time and manner of use. If they allow the use of steam power, the general law as to the crossing of ways and travelled places shall apply, *i.e.*, the consent of the County and Railroad Commissioners must be obtained.

This road, while it occupies and crosses no town-way or highway, runs through a public thoroughfare called "Main Street," and crosses

\* Omitted from last Annual Report.

others, among them an important one called "Onset Avenue." These have been laid out by the association for public travel by foot passengers and teams, and during "the season" they are as much travelled as any public way in the town.

Although these ways are designated as "streets" and "avenues," there is no claim that they are town-ways, streets or highways, or that the town is liable to keep them in order, or to respond in damages for any accident happening by reason of their being defective. One of them, at least, has a warning board stating this fact.

But the law is not confined to legally laid out ways. It includes all "travelled places;" meaning, as we suppose, all places habitually travelled by the public. The Supreme Court construing these words, in another provision of law, held that they applied to a travelled crossing never laid out, accepted or acknowledged by the town, and guarded by a signboard warning the public not to use it as it was private and dangerous. And a railroad company was held liable because it had not placed a signboard at this crossing. (*Whittaker v. Boston & Maine Railroad*, 7 Gray, 98.) The words "travelled place," used in chap. 222 of 1849, under which this was decided, are repeated in sect. 165 of chap. 112, where they are clearly used in distinction from and extension of the words "highway" and "town-way" in sect. 164. The words are used again in sect. 166, referring to gates and flagmen. And this Board has applied the words to such crossings as those in question, with the acquiescence of railroad managers.

Unless the words "travelled place" have a different meaning in different sections of the same chapter, and especially in sect. 165 and sect. 224, the question seems to be settled by the court. This railroad does occupy and does cross a travelled place; it does so without the consent of the selectmen, and its construction as a freight railroad was therefore illegal, while its unauthorized operation with steam power is another illegality.

The reason for the various provisions extending safeguards to "travelled places," as well as to public ways, are too plain to need statement. The sole object is security from danger. And the danger depends, not on the origin of the way, but upon the technical question (often an intricate one) of its legal condition, and upon the fact that it is habitually travelled. At all events it is the law; and this is decisive of the question presented to us as to this freight and passenger railroad.

It has been suggested that a passenger road might be constructed and operated upon the land of the owners without complying with any legal provisions as to railroads. Of course, a final decision can only be made by the courts. But the statute seems to point strongly to a decision. The question is not whether a man may place ties and rails

on his own land, but whether he can operate such a railroad as a common carrier, taking passengers for hire. It would seem that chap. 112 was intended to cover all such cases, and to place all such enterprises under State control, for the sake of securing to the public safety, reasonable accommodation and other rights. The definition in sect. 1 makes the phrase "railroads and railways" in chaps. 112 and 113 include "all railroads and railways in this Commonwealth, except tramways in mines and marine railways." The exception strengthens the rule by referring to structures far removed from the ordinary understanding of the words. And again, by sect. 14, the Board has "general supervision of all railroads and railways," and the provisions of the following six sections apply to all, and to the corporations, trustees or *others* owning or operating them.

Again, the express provision authorizing freight roads for private use seems to imply that passenger roads for public use cannot be constructed except under the general provisions of the law. The expression as to one class, a class less in need of State supervision, would appear to be an exclusion of the other class. At all events, we cannot advise the association or their lessee that illegality would be avoided by using their tracks exclusively for a passenger railroad, unless they comply with the provisions of the general railroad law.

It has been suggested that the track might be operated as a street railway. The Board find nothing in the law to prevent this. The law does not provide that such railways shall always be constructed in streets. The statute definition of "street railways" makes no reference to their location in streets. In fact, one such railway exists in this State, running on private property the whole length of a beach, without regard to streets. The location is given to the selectmen, and they decide on the motive power to be used. The primary cause of giving them this power may be the fact that such tracks are usually laid in streets. But it is given them in all cases, and this local tribunal seems to be the fitting one for guarding interests that are in great part local.

It was supposed by some of the respondents that the charter giving the association the power to build, lease and sell under such rules as it may prescribe, gave to it the power of the selectmen in this regard. But this theory is untenable. The power to make rules is in its terms a restricted one. It does not set aside the general laws of the State. It would not, for instance, justify the directors in licensing the sale of liquor on their land. Just as little does it justify them in locating a street railway, — a power given exclusively to the selectmen. But it is unnecessary to consider this question further; for no street railway corporation has been organized for the operation of such a railway.



The Board regrets the difficulty into which innocent parties have fallen, and would be glad to see a way by which they might escape loss and delay. But our attention has been formally called to the matter by the selectmen, who, though no legal liability rests upon them or the town, feel a moral responsibility as “fathers of the town,” that the public shall have all the safeguards required by law. And we are compelled to give notice to the association and to its lessees that the construction of the road was illegal, and that its operation without due proceedings under the statute would be a further violation of law.

For the Board,

THOMAS RUSSELL, *Chairman.*

JULY 22, 1885.

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THE ONSET BAY GROVE RAILROAD ASSOCIATION,  
PETITIONERS FOR A ROUTE.

The Onset Bay Grove Railroad Association having failed to agree with the selectmen of Wareham as to the route of their railroad, have applied to the Board to fix a route. The association desire to go from the Old Colony station to Shell Point by a direct line through Main Street and Central Avenue. The selectmen's route is identical with this until it reaches the intersection of Twelfth Street and Central Avenue. There it runs off in a northwesterly direction, reaching Shell Point by a line where there has been less building than on the other. For this the selectmen have given forcible reasons. We have not found it necessary to consider those reasons carefully, nor to compare them with the strong opinions entertained by most of the interested parties in favor of the other route.

Since the hearing on the “exigency certificate,” a new fact has been developed by the laying out of a town-way, which crosses the railroad, as planned by the association, and under such circumstances as to make a grade crossing absolutely necessary. Moreover, this would be a peculiarly dangerous crossing, for the track would be in the centre of an avenue, which will always be a crowded thoroughfare, and which would be specially crowded at the time of the arrival of the cars. There is no reason to suppose that the County Commissioners would grant a level crossing. And if they did, the Board, as at present advised, would not assent to it. It would be useless to grant formally a route which we know could never be used. As to the selectmen's route, the association declare that they do not desire it, and

would not avail themselves of it if it were granted. Our duty, therefore, seems to be to grant the line on which both parties agree, placing the western terminus on or near the easterly side of the new town-way. A formal certificate to this effect will be issued to the directors.

By the Board,

THOMAS RUSSELL, *Chairman.*

JAN. 27, 1886.

### IN THE MATTER OF THE OAK GROVE STATION.

*To the President and Directors of the Boston & Maine Railroad.*

GENTLEMEN:—The petition of Gilman Page and others relative to Oak Grove Station, which was referred to this Board by the mayor and aldermen of Malden, was set down for hearing at 10 A.M. to-day; but, owing to the neglect of the petitioners to insert our advertisement in the Malden newspaper, no public notice was given. No one appeared for the petitioners, but a letter was received asking us to have a hearing “in the vicinity of the station.” This request, at this season, we do not regard as reasonable, nor do we think it desirable to attempt a judgment upon the convenience of the building, before it is finished. We have, however, acknowledged the fact that the petitioners are entitled to a hearing in Malden, when the matter is finally heard, and we announced that an adjournment to Malden would be granted, if desired.

As neither the petitioners nor the Board can judge of the fitness of the building until it is completed, there will be no further hearing at present. When you have completed the station, we shall hear the parties, if they then desire it. To prevent misapprehension on their part or yours, we will add that it is no part of our duty to superintend details of construction. The location, by law, required the assent of this Board; and it was fixed in accordance with the vote of the city government and with the wishes of the many as compared with the interests or prejudices of the few. The question of site is settled, and is not a subject of discussion. The particulars of arrangements are matters to be settled by you in consultation with your architect. We have no desire or right to interfere. If a railroad company should fail to furnish sufficient facilities, and still more, if it should create dangers for its customers, the Board would recommend a change. But it was never designed that we should act as supervising architects in the construction of stations. Whether the business of this place justifies the

construction of a building as extensive and costly as that which the company proposes to build, is a question beyond our jurisdiction. Nor is it within our jurisdiction to direct the precise manner in which it shall be erected and furnished.

For the Board,

THOMAS RUSSELL, *Chairman.*

JAN. 12, 1886.

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JOHN H. ROBINSON AND OTHERS OF ARLINGTON, PETITIONERS FOR PROHIBITION OF WHISTLING OF LOCOMOTIVES ON THE LEXINGTON BRANCH RAILROAD AT CERTAIN CROSSINGS.

The petitioners were not numerous, and did not include the selectmen. The corporation made no objection, but by its manager pointed out the peculiar dangers existing at the first-named crossing.

There is no good reason against granting the petition, so far as Water Street is concerned; and an order will issue forbidding whistling as a crossing signal at this point. But the case at Arlington Avenue is different. The gates are not parallel with the railroad, and they fail to guard two private ways, one of which leads from a livery stable. These ways, when the gates are closed, are open to tempt travellers into the space on the railroad track between the gates. In addition to this, it was shown that many persons, including some of the petitioners, were accustomed on their way to the station to walk on the track instead of using the highway. This greatly increases the danger at this point, and calls for additional precautions. The main purpose of the whistle is to warn travellers who are crossing the track, but it is also of service in warning those who are walking along the track; and we cannot direct its discontinuance at a point where such occupation of the tracks is habitual.

It is true that persons so using the railroad are trespassers and violators of law. But the penalty which is actually inflicted upon them in case of accident is so terrible that we should not be justified in exposing them to it by ordering the railroad operators to discontinue the most effectual warning. It is a case where men must be protected against the results of their own negligence, even to the annoyance of innocent persons. No order is given as to this crossing.

It appears that Water Street crossing is one where the grades could easily be separated. It is hoped that an order for discontinuance of whistling there will not prevent an application for such separation.

By the Board,

THOMAS RUSSELL, *Chairman*.

JAN. 13, 1886.

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GEORGE ROBINSON AND OTHERS OF PALMER *v.* BOSTON & ALBANY RAILROAD COMPANY.

The petitioners, who are a committee of the town, including the selectmen, complain that the station at Palmer has no suitable means of access, and ask a recommendation that the company improve the approaches thereto. The present union station was located by the corporation with the assent of the town and of this Board; and it was built and decorated at great cost. But in order to cut off a dangerous approach from Main Street a fence has been erected, which prevents access to the station at the point nearest the centre of business, and forces most of the people to use a circuitous route, adding a quarter of a mile to the distance. This inconvenience is suffered not only by the great body of citizens in the village, but of several other places. The remedy sought by the petitioners is by a foot-way crossing the tracks at a level, but suggestions were also made as to an overhead or underneath crossing.

The first question is one of jurisdiction; and it was for the purpose of hearing an argument on this question, as well as on the merits, that a hearing was notified. As the only power of the Board is to give a recommendation, it might seem to some superfluous to consider such a question. But this is not the theory of our law. Its intention is that great weight should attach to a formal recommendation founded on the statute, — more weight than would be given to a mere voluntary suggestion. So it has generally proved with the recommendations heretofore given by the Board. Elsewhere the value of such a jurisdiction has not been appreciated. We are told that on a recent occasion the English House of Commons laughed at the idea of a Board having only authority to recommend. They could not understand a decision which did not result in an execution, and which could not be enforced by a constable. Here for seventeen years such decisions made by the Board as arbitrators between the companies and the public have been found to be of value. That value would be lost or greatly impaired if recommendations were made recklessly and without regard to the provisions of law.



The only possible source of authority for acting in this case is in sect. 16 of chap. 112: "The Board, whenever it deems that repairs are necessary upon any railroad . . . or an addition to or change of its stations or station-houses . . . is reasonable and expedient in order to promote the security, convenience and accommodation of the public, shall in writing inform the corporation," etc. The words refer to new stations, new station-houses and alterations of station-houses. It would be a perversion of language to hold that they cover the laying out of a way to a station. And such a construction would be more unnatural because the subject of crossings over railroads is regulated by special provisions of law. The Board denies the prayer of the petition for want of jurisdiction.

THOMAS RUSSELL, *Chairman*.

MARCH 31, 1886.

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WILLIAM H. WARE AND OTHERS *v.* BOSTON & ALBANY  
RAILROAD COMPANY.

William H. Ware and others complain of various annoyances suffered by residents between Berkeley and Ferdinand Streets from the operation of the Boston & Albany Railroad. They complain of smoke, cinders, and of increasing and unnecessary noise made by the engines and by employees.

Of course some annoyance to the neighborhood is incidental to the operation of a railroad, especially in a city. So far as it is necessary, it has been paid for in land damages to original holders of the land. They are paid in advance for the prospective increase of these annoyances, such as will result from an increase of traffic. And those who buy land or build or hire houses in the immediate neighborhood of a railroad do it with full knowledge of the fact that they are liable to discomfort, and that they are not entitled to relief from it, or to any further compensation for its existence. It is not necessarily ground for complaint to this Board, or for proceedings in a court of law, to show that very great, or even intolerable, discomfort is caused to persons who live close to a railroad by its operation. That which would otherwise be a nuisance has been legalized for public reasons. So far as the annoyance is unnecessary it is illegal, and it would be the desire of any good railroad manager, without close inquiry as to its legality, to reduce the annoyance to the narrowest limits.

The parties here seem to be in error as to the increase of smoke and cinders. The Boston & Albany managers have done what they could to reduce that annoyance. In so doing they have necessarily



increased the discomfort arising from an increase of noise. The general opinion of railroad men is, that by using the extended smoke-box the balance is in favor of comfort in the vicinity of the railroads. The switching engine now in use saves its cinders, and reduces the annoyance arising from this source. Its exhaust makes more noise than the old form. But the witness who expressed a desire for the switching engine used on the Old Colony Railroad made a great mistake. The Old Colony was a pioneer in using the engine complained of. The Boston & Albany was the last company to adopt it for use in Boston. The object in so doing was to reduce the discomfort of neighbors and passengers.

Upon the imperfect evidence before us, we cannot say that the object has not been accomplished. The increase of smoke and cinders was not connected by any testimony with the use of shifting engines. It probably results from the great increase of traffic. So far as it is a necessary consequence of that increase, it is not a just cause of complaint; and the petitioners, indeed, disclaimed any complaint whatever connected with the operation of the main track of the road.

As to the disturbance arising from the loud talk of the employees, and especially from vulgar, insulting and profane outcries, it seems that this arises, not from the conduct of any one directly employed by the Boston & Albany company, but from those who have charge of Wagner cars.

It need not be said that the Boston & Albany managers ought not to allow, and do not desire to have, the peace of the neighborhood disturbed by men who are in any way connected with the train service on their road. And they will put an end to such disturbances if they can. The petitioners can aid them in carrying out their desire by promptly reporting any case with as much detail as possible. General orders have, as we are assured, been given. But to fix the fault upon any offender, an early complaint is needed in each case.

Some other matters were complained of as to which the jurisdiction of this Board might be doubted; but the managers have promised that, so far as is possible, the just wishes of residents in the vicinity shall be complied with, and that the discomfort arising from operation of their road shall be made as small as it can be consistently with the discharge of their duties as common carriers.

By the Board,

THOMAS RUSSELL, *Chairman*

MAYOR AND ALDERMEN OF WORCESTER *v.* BOSTON  
& ALBANY, NORWICH & WORCESTER, AND PROVI-  
DENCE & WORCESTER RAILROAD COMPANIES.

The mayor and aldermen of Worcester, acting on the petition of many leading citizens, complain that the bridges by which the above-named roads pass over Southbridge Street are so constructed that horses driven under them are frightened by the noise and by the escape of steam, causing great danger and frequent accidents; and they ask the Board to recommend such action as will abate or reduce this evil. The selectmen of Auburn and Oxford join in support of this petition. The testimony proved that the annoyance and peril arising from the use of these bridges are almost insufferable, resulting in frequent accidents, one of which proved fatal. A view corroborated this testimony, and showed that the results as described are inevitable, while the bridges remain as they now are. The trouble is greatly aggravated by the increase of travel on the street, and by the recent construction of a street railway. The increased railroad traffic also adds to the danger.

Objection was made to the consideration of this case by the Board, upon the ground that full jurisdiction is given (by sect. 129, chap. 112, P. S.) to the County Commissioners to deal with such cases, — the section providing, among other things, for “an alteration . . . in a bridge at the crossing” of a highway and a railroad; and if the County Commissioners have authority to act in the premises, it would be a delicate matter for this Board, which, in such cases, is an appellate tribunal, to give an opinion in advance upon a matter which might, on appeal, come before it for final decision. But the mere fact that other tribunals have power to take final action in any matter does not, of itself, deprive this Board of power to recommend improvement. If such a recommendation is a duty, it must be done, however delicate its performance may be. And it has been the practice of the Board in other cases to recommend such action as will prevent the need of applying to other tribunals.

In this case, whatever the authority of the County Commissioners may be, the courts would seem to have jurisdiction to prevent a dangerous nuisance, or to inflict penalties upon any corporation for maintaining it. If one-half the testimony is true (and it was left without contradiction), an indictment would lie against one or all of the railroad companies named. But this fact would not deprive the Board of the power to recommend improvements in construction. The existence of a nuisance perilous to life and limb would rather make it our duty to advise that it should be abated without waiting for an in-

dictment. But it seems at least doubtful whether sect. 129 applies to such a case. The words may literally cover the proposed action, but the context and the history of legislation show that the mind of the Legislature was fixed upon other matters. Location, altitude, the length and width of bridges, were the important subjects considered by the framers of the statutes which now appear in this section. It would be unfortunate if a recommendation could not be given for a comparatively slight improvement in a bridge, which is demanded for the safety of travel, without using the complicated machinery of sects. 129, 134, with the necessary hearings before several tribunals, judicial and otherwise. Such proceedings would certainly be obnoxious to railroad companies, and would probably be resisted by them. It is said that, if a recommendation is carried out, the cost will fall upon the railroad companies alone, while, by proceedings under sect. 129, the cost may be equitably distributed between the corporations, county, city and towns specially interested. And it might be argued that such a contribution is peculiarly equitable, when the existing mode of crossing has long been acquiesced in, and may be presumed to have once been satisfactory to the municipalities concerned. But, if this were proved, it would not necessarily follow that the municipal bodies interested ought to share in the cost of the needed improvement. The road is bound, not only to cross by a bridge originally safe for travellers passing under it, but if, by reason of a great increase in travel or otherwise, the bridge as constructed becomes unsafe or becomes a source of danger, then it is the duty of the railroad company to remove the cause of danger. This was the view taken by the Supreme Court in *Cooke v. The Boston & Lowell Railroad Company*, 133 Mass. 185, where it was held that, although a bridge built by a railroad over a street was adequate when built, yet, if by reason of increased travel on the highway it had become inadequate and obstructive to the safe use of the highway, the railroad company must alter it. And in this case the corporation was held liable for personal injuries received by a traveller on the highway. This decision followed the analogous case of *Commonwealth v. New Bedford Bridge*, 2 Gray, 339, where it was held that the obligation fixed by a charter to build "suitable draws," imposed the duty not only of building draws suitable at the time to the needs of navigation, but of building and maintaining draws of such width as vessels might need "in the progress of time and the advancement of commercial intercourse." The cases before us are analogous to those cited. The passage under the bridges, fairly safe once, has become dangerous because of the enormous increase of travel. It was the duty of each railroad company originally to construct its bridges so as not to render unsafe travelling on the highway as then used. Now it is the

duty of each company to alter its bridges so as not to render unsafe travelling on the highway as it is now used.

The suggestion that sect. 135 of chap. 112 gives jurisdiction of this case to County Commissioners does not seem correct in view of the construction given to that provision of law in *Springfield v. Connecticut River Railroad Company*, 4 Cushing, 63. Nor would it be easy to frame a petition under which the County Commissioners could pass a decree in this case.

We believe that public convenience and safety call for a recommendation under this petition for such additions as will diminish or destroy the danger to travellers arising from the use of these bridges. In deciding upon the details, as to which the testimony was scanty, we have availed ourselves of the skill of an expert engineer, and the Board adjudges that the complaint is well founded, and informs the corporations above named that it considers the following-named improvements and changes necessary to promote the security and convenience of the public, viz., that a double flooring be laid across each bridge from fence to fence. We would suggest that two thicknesses of matched spruce, each one inch in thickness, breaking joints, should be laid on the railroad ties, with the rails upon the boarding. Underneath a system of purlins should be supported on the bottom flanges of the floor beams, with rafters and two layers of one-inch matched spruce.\* Some extension of the fences at the ends of the bridges is also advisable; and we hope that this will prove sufficient without doubling the fences. If necessary, this also could be done afterward, leaving an air space between the two fences. At present we only recommend that the double flooring, as above indicated, be laid as soon as possible.

By the Board,

THOMAS RUSSELL, *Chairman*.

Nov. 3, 1886.

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B. W. MARKS AND OTHERS, RESIDENTS NEAR WELLINGTON STATION, *v.* BOSTON & MAINE RAILROAD.

The people using Wellington station complain that an express train to Boston runs rapidly by that station at the time when the 5.25 P.M. train from Boston is delivering its passengers, thus putting them in great peril. No law forbids this practice, and the Legislature, when

\* The floor would be practically water-tight, and water could be taken down through scuppers and discharged through pipes laid between the floors, so as not to communicate sound.



a bill prohibiting it on all railroads was proposed, refused to enact such a law. But the common law, which requires due regard for the life and the safety of passengers, would seem to forbid the practice of running a train at full speed by a station where a train is receiving or discharging passengers. The rules of the Boston & Maine Railroad certainly forbid this, and any infringement of the rule ought to be reported at once to the manager of the road, so that the charge may be investigated while it is capable of being proved or disproved.

There is in this matter the usual conflict of testimony as to the frequency of such occurrences. But the fact is of little consequence so far as this complaint is concerned; for, if the passengers of the train in question will leave the train on the proper side, — *i. e.*, on the side of the platform, — they will always be safe from the express train. Danger is incurred by their taking the “short cut” across the tracks on the left hand of their train. To this the petitioners reply that the platform is only about sixty feet long, covering only two cars out of the six of which the train is generally composed, and in any one or more of which they may be; and it is added that the descent into the ditch beyond the platform is not only inconvenient, but dangerous, especially as it is not well lighted. This seems to be true, and the remedy is to lengthen the platform materially, and this extension is called for by the growth of the community near this section. We recommend the prompt extension of the platform, and that it be always lighted when light is needed. In addition to this, we refer to our recommendation given February 9. on a Malden complaint, that the directors consider the expediency of placing gates on their cars, and we now recommend that this be done as soon as possible, and that the gate on the side next to the opposite track be closed and locked. The excellent working of this system on the Boston & Albany Railroad answers all real objections to it, except the objection of expense. That objection is not worthy of consideration when the great increase of security is considered. In case of accident, arising from a want of this precaution, especially of accident to a stranger on the road, it might well be held that the injury was due to defective construction or equipment. It is possible that some passenger, at some station, if not at this station, may object to this because of the loss of time which he will suffer; for there is no right more prized than the supposed right of a traveller to risk his life in order to save a fraction of a minute; but such objections should be disregarded. It is often the moral duty of railroad managers to protect the public against the consequences of their own recklessness.

By the Board,

THOMAS RUSSELL, *Chairman.*



## [I.]

## REPORT ON THE MEIGS ELEVATED RAILWAY.

*To the Board of Railroad Commissioners of the State of Massachusetts.*

GENTLEMEN: — I had the honor to receive from you, on the 27th of October last, an appointment as engineer under the provisions of sect. 4, chap. 87 of the Acts of 1884, for the purpose of “examining the safety and strength of the structure of the Meigs Elevated Railway, so called, in Cambridge, and the rolling stock and motive power used thereon, and of approving or disapproving the same.”

In pursuance of this appointment, I have since devoted a very considerable portion of my time and attention to the required examination, and beg leave now to submit this, my report: —

The experimental section of Meigs Elevated Railway, which has been constructed at East Cambridge, is located on grounds formerly occupied by the Bay State Glass Company, and extends over Bridge Street to grounds of J. P. Squire & Co.

The structure has been erected wholly on made land, upon what was once the bed of Miller's River, and the mud underneath this made land is soft and deep. A rod of round iron, five-eighths of an inch in diameter, was easily forced down near the structure, by one man, in my presence, its entire length, twelve feet, without striking hard bottom.

The difficulty of building a secure single-post structure on this foundation has, of course, been much greater than it would have been on ordinary solid land.

In addition to this natural difficulty, Captain Meigs has purposely introduced artificial obstacles in his track, for the purpose of showing that he can run his trains around curves of less radius, and on grades of greater elevation, than are now practicable on ordinary steam motor railways, and can safely pass horizontal or vertical angles in the track of very considerable deflection. One of his curves makes an entire semi-circle, with a fifty-foot radius, on a grade of 120 feet to

the mile, and another turns nearly a quarter-circle, with a radius of fifty feet, on a grade of 345 feet to the mile.

The construction of the track is simple, and the question of its strength and safety is easily determined.

The entire structure consists of a single line of girders supported on a single line of posts; the two rails on which the bearing wheels supporting the load run, being placed on the upper outside corners of the lower boom of the girder, and the two rails that resist the pressure of the horizontal driving and guiding wheels, being placed on the outer sides of the upper boom of the girder.

The problems to be solved are, first, as to the strength of girder for sustaining a vertical load represented by the fixed weight of the girder and the moving weight of the train passing over it, and for resisting the horizontal strains and twists that may come either from the grip of the driving wheels, or the momentum of the train, or the action of wind; and second, as to the strength of the posts for sustaining the weight of girders and trains, and their stability and power of resistance against side pressure, caused by momentum or wind blowing upon the side of the train.

The railway company has submitted to my examination extensive and thorough computations, made by engineers in their employ, to show the force of these various strains, and the amount and form and quality of material required in the girders and posts, to safely resist and bear the loads and strains to which they are or may be subjected.

These computations show that the structure, as built, is, theoretically, of ample strength and stiffness, under all circumstances, to safely carry the train; and the numerous trips that I have myself made over it, with the locomotive and cars, practically verify these theoretical calculations.

But for the purpose of more tangible verification, I caused one of the longer girders to be loaded, in my presence, with a known weight, of nearly double the amount that could be brought upon it by the train, and noted myself the results by gauges arranged to show the deflection. The girder experimented upon is about forty-six feet long, and its lower boom is about eighteen feet above the surface of the ground.

Two large iron cylinders (rendering tanks), laid on cross timbers, were suspended under the exact middle of the girder by means of a heavy chain passing over the upper boom. The tanks were then filled with water, making an aggregate weight of water, tanks, chain and timber of 60,187 pounds, or about thirty net tons, equal to a distributed weight of sixty tons upon the girder, — a load greatly in excess of any that could ever be put upon it by the train. The de-

pression of the girder at its centre under this load was seven-sixteenths of an inch; and on removing the load the girder sprang back to its original position.

To test practically the power of the girder to resist lateral strains arising from pressure of wind and unbalanced loads computations have been made, based upon the force of a hurricane blowing 110 miles an hour, squarely against the side of the train, when the load is out of balance by passengers being at same time all on the leeward side of the car. And the side pressure on a girder, arising from these extreme conditions, is computed to be equal to about  $4\frac{42}{100}$  tons. By means of a cable attached to the centre of a girder and passing horizontally over a loose pulley in the top of a shear, and suspending vertically a platform loaded with pig iron, I applied a force of  $5\frac{29}{100}$  tons, to pull the girder sideways; being an excess of 20 per cent. over the computed extreme force of combined hurricane and unbalanced load. The side deflection of the girder at its middle, caused by this pressure of  $5\frac{29}{100}$  tons, was three-eighths of an inch. This pressure caused the posts supporting the girder under test to bend at their tops one-half inch. On removing the weight the girder and posts sprang back to their original positions.

As the iron posts are of good design and well built, and securely fixed in place by foundations of timber and concrete, and have stood the pressure and strain of the train passing over them at frequent intervals for some months, I consider them satisfactory, and that no further test of their strength is necessary. The method of filling them with concrete, so arranged as to mainly take the weight, instead of leaving it to be supported by the iron shell, is especially commendable.

The wooden posts now in use on the low part of the structure answer very well for experimental purposes; but in a line intended for city traffic, I should advise that iron posts, filled with concrete, be adopted in all cases.

The structure of this experimental piece of railway, as now submitted to my examination, is, in my opinion, safe, and sufficiently strong, except in the plate angle iron rails on the lower boom of the girder, which have proved too light, and are about to be replaced with heavier ones.

It contains, however, objectionable curves and grades and angles, purposely placed there for extreme tests, to show what obstacles may be overcome, if necessity compels them to be encountered, and to find out what changes may be desirable in the proportions of the machinery. In my opinion, these extreme features should be eliminated, and, wherever possible, kept out from any line intended for business purposes.

The motive power and rolling stock submitted to my examination

consists of a locomotive, weighing about thirty tons ; a tender, weighing about fourteen tons ; and a passenger car, weighing about seventeen tons ; making up a train of about sixty-one tons aggregate weight when empty.

Excepting the distinctive running gear, or trucks, of this railway system, the general features of the motive power and rolling stock correspond to, or are supposed improvements upon, the locomotives and cars of ordinary steam railways.

A cylindrical shape has been adopted for all the equipment, for which shape peculiar advantages are claimed as to safety, convenience and economy, and particularly as to offering less resistant surface to the wind.

The car is more elegant and commodious internally than ordinary cars, and being largely built of metal, instead of wood, is safer as regards fire, or as regards splinters in case of accident. The turntable arrangement of the trucks also seems stronger and safer than the trucks now in common use.

The leading features of the system centre in the trucks. They are constructed to straddle the girder, so that if all the bearing wheels were knocked off, the fall of the truck would not be over two or three inches on to the top boom of the girder, on which it would slide or rest. The wheels that bear the weight, instead of being placed in the ordinary upright position, are fixed at an angle of about forty-five degrees from the vertical plane ; the bearing face of the wheels being grooved to fit down upon the angle iron supporting rail on the upper corners of the lower boom of the track girder, so as to bear both downward and inward on the rail. Each wheel has its own independent axle securely fixed in the iron jaw of the truck at right angles to the plane of the wheel. By this arrangement, the axle strains and the slipping of wheels on curves, so troublesome in wheels and axles of the ordinary construction, is wholly avoided ; and it becomes possible to use sharper curves in the track than have ever before been practicable. Each truck has also two horizontal guide wheels, bearing against the rails on the sides of the upper boom of the track girder, to prevent the truck from swaying.

As the sustaining rails of the track on the lower boom of the girder are but twenty-two and one-half inches gauge, and the wheels stand sloping outward from these rails on an angle of about forty-five degrees, the first appearance of the rolling stock to a casual observer is one of extreme instability. But upon investigation and practical test this appearance is found to be deceptive. Careful mathematical and mechanical analysis of the arrangement of the wheels and axles shows the plan to be theoretically correct, and that, as a matter of fact, this arrangement of trucks, upon properly constructed girders, is



more stable and more safe than the trucks of ordinary rolling stock upon the ordinary railroad tracks.

For the purpose of testing the safety of these trucks in the event of accident, I caused one wheel to be removed from a truck under the car, so that the car would be in the condition of losing a wheel by breakage while in motion. The train was then run over the track with one wheel gone. There was no perceptible tipping of the truck on account of the absence of this wheel, and no apparent tendency to derailment. The absence of the wheel would not be noticeable to passengers in the car.

I also caused a section of the supporting rail and timber of one side of a lower boom to be cut away and removed, leaving an open gap of about six feet in the track. The car was then pushed over this gap, and, of course, became derailed; but it only dropped about two inches, and slid along on the upper boom as securely as if on its wheels. The centre of gravity being but little above the boom on which the car rested, the side wheels and truck jaws held the car effectually in horizontal position with very little strain. Apparently a derailed car, on this system, could not tip over; which cannot be said of ordinary railroad cars on the ordinary railroad tracks.

The locomotive has some minor novelties of construction besides the truck arrangement above alluded to, not necessary here to describe; but its main features are, the horizontal driving wheels which pull the train by side pressure on the rails of the upper boom of the girder, and the hydraulic attachment by which the pressure or adhesion of these driving wheels upon the rails is created, maintained and regulated at will by the engine-driver.

This motor has accomplished some remarkable feats. It draws itself and the attached train with apparent ease and at great speed around sharper curves and up heavier grades than the ordinary locomotive can pass. But being the first of the kind ever built of full size, and having been from the outset put at work on a track purposely planned to bring out in this experimental stage any existing weakness of design (through trial on unusual grades and curves and angles, requiring machinery of great perfection and power to overcome these extraordinary obstacles), it has, as might be expected, proved weak in some of its minor proportions, and there has been more or less breakage in the strained parts. All the defects thus far developed seem, however, to be susceptible of easy remedy, and no doubt, in future construction, the proportions of the parts will be greatly improved.

With so radical a departure from the ordinary mode of applying locomotive power, it is only to be expected that perfect proportions will develop slowly and out of the results of extended use or prac-



tical experiments. This is but the usual rule applying to all inventions.

The result of my investigations may be summed up as follows : —

The experimental section of the Meigs Elevated Railway now in use at East Cambridge is, in my opinion, abundantly strong for its intended use as an elevated railway track, and is safe for the passage of its equipment.

The rolling stock and motive power used thereon is also strong and safe for its intended use, no breakage having occurred, or being likely to occur, that could imperil personal safety either in or out of the cars.

A line of railway properly constructed on this principle for passenger or freight traffic, and equipped with such rolling stock and motive power, on this principle, as the Meigs Company is now prepared to perfect and build, would, in my opinion, be at least as strong and safe for any kind of traffic as the ordinary surface or elevated steam railways now in common use.

In view, however, of the imperative necessity for the best class of design and construction in everything appertaining to an elevated railway, I think it would be wise for the State of Massachusetts, through its Board of Railroad Commissioners, or otherwise, to regulate the strength and design of all materials used in construction, and the weight and design of equipment to be run, etc., as is done by New York through its "Rapid Transit Commission" for elevated railroads in that State.

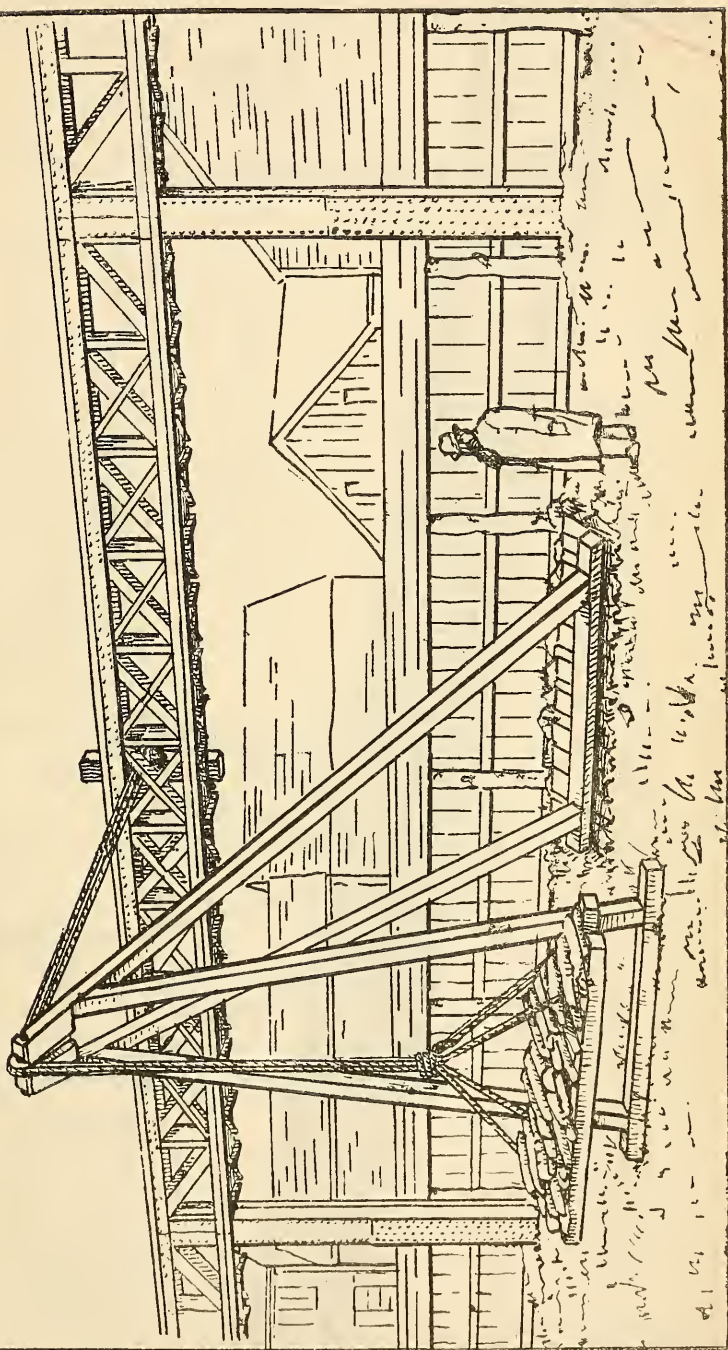
I attach to this report some sketches, kindly furnished by Captain Meigs, showing a perspective and a sectional view of his track and equipment, and the methods used by me for applying the weight and pressure tests to the girders and posts.

Respectfully, your obedient servant,

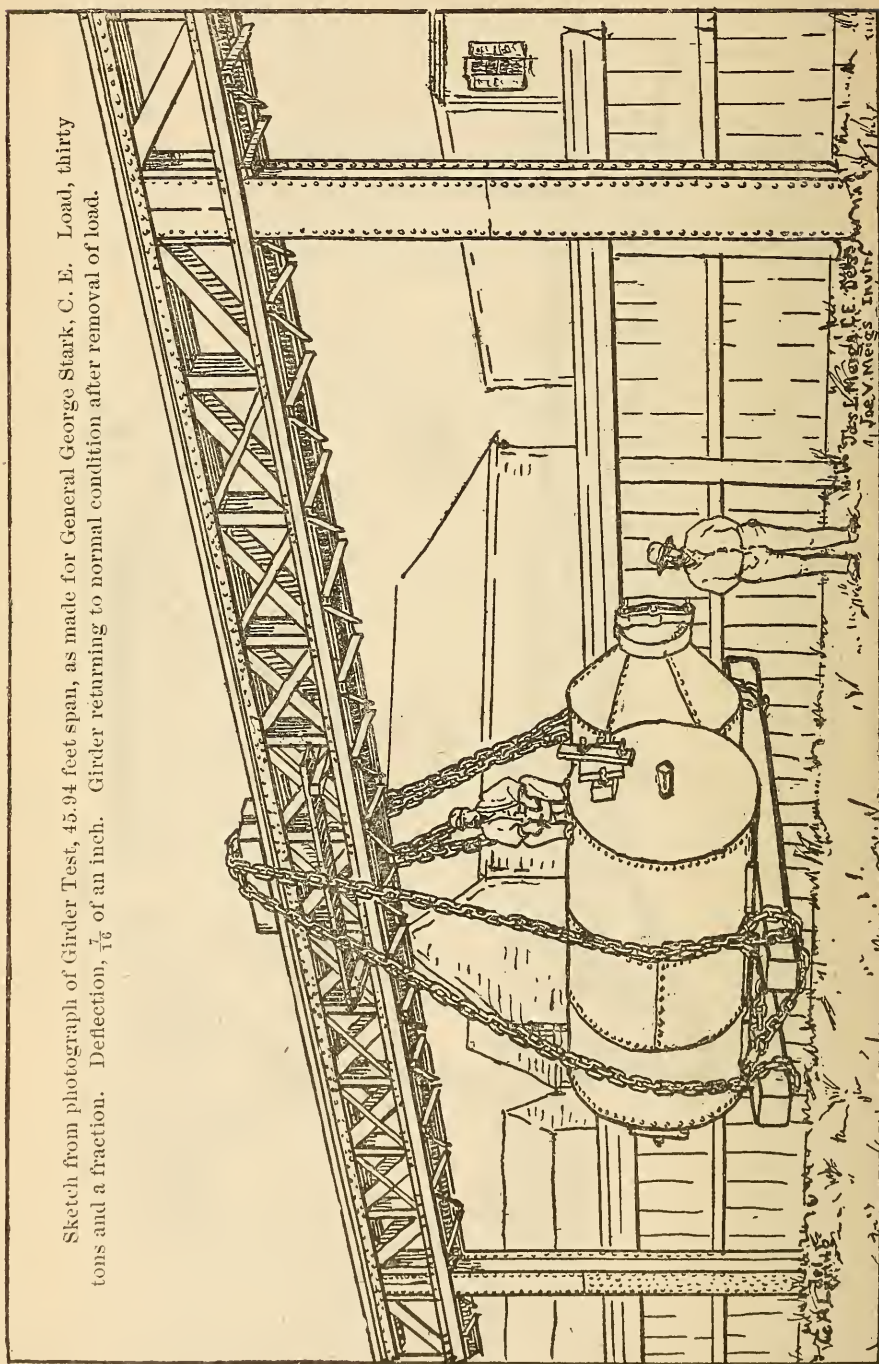
GEORGE STARK,  
*Civil Engineer.*

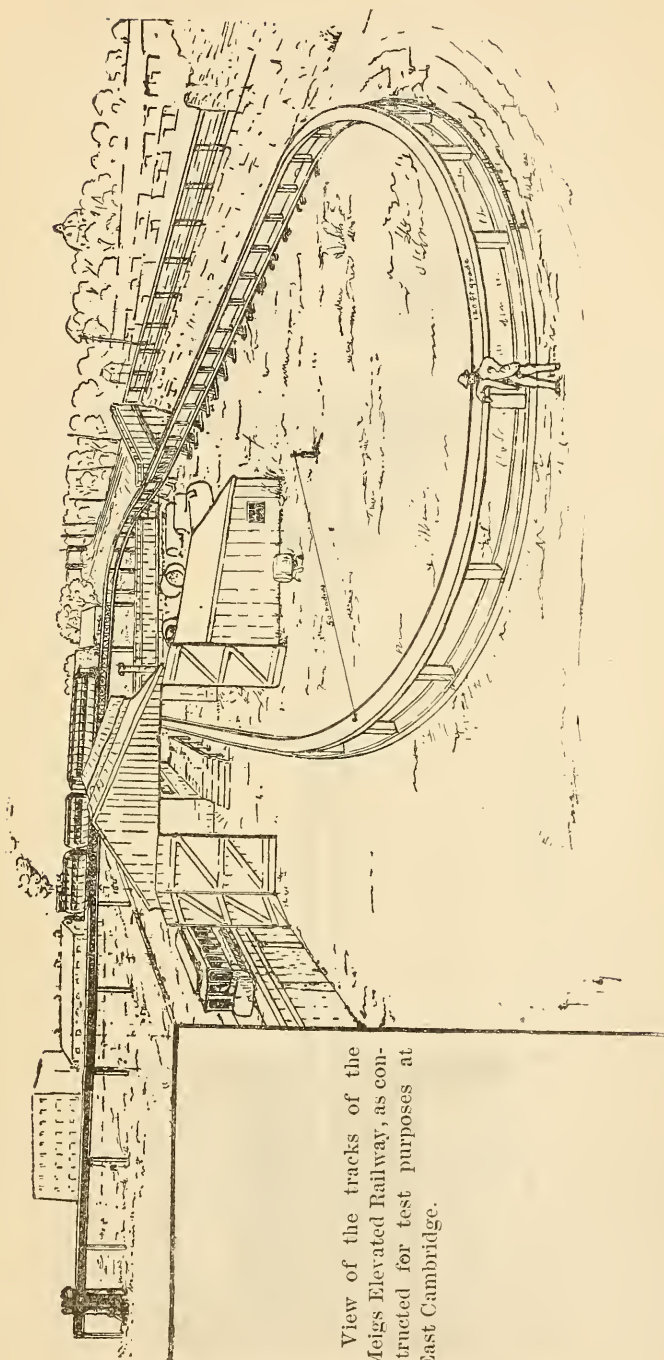
DEC. 23, 1886.

Sketch of photograph of Girder, 45.94 feet span, as made for General Stark. The same as if a wind were blowing at 33 lbs. per square foot against the walls of the car. The girder deflected  $\frac{3}{8}$  of an inch; posts deflected  $\frac{1}{2}$  inch: returning upon removal of load to normal position. This would be a wind effect of a hurricane blowing 110 miles an hour



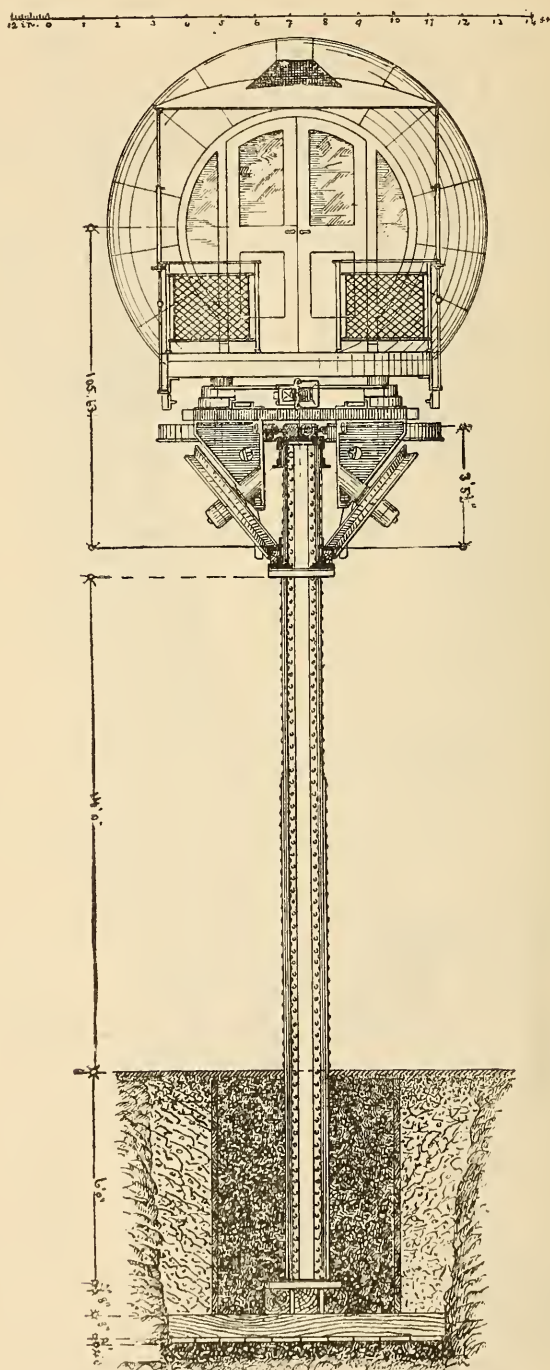
Sketch from photograph of Girder Test, 45.94 feet span, as made for General George Stark, C. E. Load, thirty tons and a fraction. Deflection,  $\frac{1}{16}$  of an inch. Girder returning to normal condition after removal of load.





View of the tracks of the  
Meigs Elevated Railway, as con-  
structed for test purposes at  
East Cambridge.





The above cut is an end representation of the car upon the track, — its trucks, the post, and its setting.



[J.]

OFFICE OF MARTIN ANTI-FIRE CAR-HEATING CO.,  
DUNKIRK, N. Y., Jan. 3, 1887.

Judge RUSSELL, *Chairman of Board Railroad Commissioners, Boston, Mass.*

DEAR SIR:—In describing our system and its work, permit me to state that we put a dry pipe in the steam dome of the locomotive, connecting it to a valve in the cab; near that valve we put a reducing-valve, automatic in action,—with it we reduce the steam to any pressure desired; from said reducing-valve we run a pipe through the floor of the cab and attach to it our metallic couplings. At the front of tender and under it we fasten a joint, then run a pipe from it to another joint at furthest end of tender, through which we transmit the steam for the train. That pipe is carefully covered to avoid condensation.

We run a main pipe under each car. At the centre of car we take the steam in on each side of the aisle, under the seat; there we put a valve, so as to admit or close out the steam. After the steam once enters the car no water from condensation can get to the supply pipe, as each car drips its water away as soon as formed.

Thus we can shut off any car on the train without affecting any other car. Should they have a car on the train sealed, or not in use, we simply use its main pipe to transmit the steam to cars behind it. There is no water in pipe to freeze, as it is discharged as soon as formed; and a train can run all day without attention, other than controlling the temperature by opening, closing or cutting down close the two valves inside the car.

When a train goes out of service, all there is to do is simply to uncouple between cars, which can be done fully as quick as the air-brake can be uncoupled; then open a small valve in the end of trap. (This is not necessary, but we put it there as a matter of caution, so as to give free vent to the air when steam is put in the train.)

Of course the time for heating up train depends upon the length of the train. It takes but a very few minutes on five cars to put steam through them,—from five to ten minutes. After once through, in

zero weather I believe thirty minutes plenty of time to make the train comfortable.

However, the train on Boston & Albany is heated in Boston in about twenty minutes; and it is always comfortable, with a splendid atmosphere, because there are no gases to escape, and a free ventilation is maintained, with the heat evenly distributed.

We have yet to find an engineer who claims to be able to detect the loss of steam after pipes are once hot, and that is done when engine is standing still. In depots where they use steam for heating purposes they can attach cars on track in depot to steam plant, and warm them before the engine is out, if desired. On the Cleveland, Columbus, Cincinnati & Indianapolis Railroad they have not had to pay out any money for repairs, though they have run one train two years and two other trains one year. It is generally admitted by those who use it, that for economy, efficiency and safety it surpasses any system known. Against those three things, of course, roads must put the fact that they must make some minor changes in operating, such as heating cars before the engine comes, or set the engine out long enough before, to heat the train. When once heated, a train will run from thirty minutes to one hour with steam cut off, — the pipes being hot, — without the passengers experiencing any inconvenience. We believe we can heat from eight to ten cars from an engine without any material damage to its motive power, — perhaps more; I do not know.

I believe there is no reasonable limit in ability to heat if steam is furnished. You understand high steam, cut down to a pressure of five or six pounds, has many more degrees of heat in it than five pounds of low steam; therefore it heats more and lasts longer than low steam, thus requiring less to do the work. I can regulate it in each car so that every car in the train will have a uniform pressure and temperature.

It is now in successful operation on the Dunkirk, Allegheny Valley & Pittsburgh R.R., Boston & Albany Railroad, and we are now putting it on Long Island Railroad and Chicago, Milwaukee & St. Paul Railroad.

Last, but to me not least, we have never had to take it off a train or car, once put on. Every railroad patronizing us has called for more.

I think of nothing more now, unless it is that our business is growing, and we anticipate a successful trade during this next year.

Any particular questions you may think of and desire answered, I shall be pleased to do, if in my power.

Yours very respectfully,

WM. MARTIN,

*President.*

[K.]

## CIRCULARS.

COMMONWEALTH OF MASSACHUSETTS,  
BOARD OF RAILROAD COMMISSIONERS,  
No. 20 BEACON STREET,  
BOSTON, April 12, 1886.

*To the General Managers and Superintendents of the several Railroads in  
Massachusetts :*

Your attention is called to the law providing for the testing of locomotive boilers, Acts of 1882, chapter 73, and to the revised regulations adopted and published by the Board under that law, and herewith communicated to you.

You are requested to report, at your earliest convenience, the record of the tests made during the year preceding this date, and hereafter to report, as provided in the regulation numbered 5, to which your special attention is called.

Per order of the Board,

WM. A. CRAFTS,  
*Clerk.*

[ACTS OF 1882, CHAP. 73.]

[AN ACT to Provide for the Testing of Locomotive Boilers ]

*Be it enacted, etc., as follows :*

SECTION 1. The board of railroad commissioners shall, as soon as may be, adopt, publish and communicate, to every corporation or person operating a railroad, or any portion of a railroad, in this Commonwealth, regulations for testing the boilers of locomotives.

SECT. 2. After three months from the publication of said regulations, any corporation or person using on a railroad in this Commonwealth a locomotive the boiler of which has not been tested as provided by said

regulations, shall be liable to a penalty of twenty dollars for every day of such use, to be recovered for the use of the Commonwealth by fine imposed on complaint before any court or magistrate of competent jurisdiction.

SECT. 3. Said board may from time to time revise said regulations, and when such revision has been communicated to any corporation or person operating a railroad or portion of a railroad in this Commonwealth, it shall have the same effect as to such person or corporation as if originally adopted by said board.

SECT. 4. Nothing in this act shall be construed to authorize the appointment by the board of any person to test locomotive boilers. All the testing of such boilers under the regulations of said board shall, when possible, be done by the master mechanic of the corporation, firm or person constructing or repairing such boilers, or using them on a railroad in this Commonwealth. [*Approved March 16, 1882.*]

#### REVISED REGULATIONS FOR THE INSPECTION AND TEST OF LOCOMOTIVE BOILERS.

[Adopted and published by the Board of Railroad Commissioners under the provisions of chapter 73 of the Acts of 1882.]

1. All boilers for locomotives before going into service must be subjected to a hydraulic pressure of 150 pounds per square inch.

2. The water must be heated to near the boiling point.

3. This test must be repeated at least once a year.

4. The superintendent of motive power, master mechanic, or other proper agent of the company, will attend in person. He will remain outside while an assistant will examine the fire-box from the inside.

5. A record of all tests will be made, giving dates and anything worthy of mention, and reported to the Board, annually, between the first of January and the first of April.

6. Special examinations of the stay-bolts of locomotives in service should be made not less frequently than once in three months, and a record thereof, with dates of examination, included in the annual report of tests.

7. When these examinations are made, all the water must be drawn from the boiler, so that the vibration of the sheet may indicate any unsoundness of the stay-bolt when it is struck with the hammer.

The Board urgently recommends, in addition to these regulations, that the four upper rows of stay-bolts shall be drilled from the outside three-fourths of an inch in depth and three-sixteenths of an inch in diameter.

WM. A. CRAFTS,

*Clerk.*

Boston, April 10, 1886.

[Blanks for reports of boiler tests may be had at the office of the Board, and will be forwarded on application.]

COMMONWEALTH OF MASSACHUSETTS,  
BOARD OF RAILROAD COMMISSIONERS.

Attention is called to chapter 120 of the Acts of 1886, entitled  
“An Act for the Protection of Railroad Employees.”

This act provides that every railroad corporation operating a railroad, or any part of a railroad, in this State, shall, before the first of next January, adjust, fill or block its frogs, switches and guard-rails, so as to prevent the feet of employees from being caught therein.

The general delay or neglect to act in this matter would seem to show that railroad managers have forgotten that this work must be completed before the new year.

WM. A. CRAFTS,  
*Clerk.*

*To the Managers of the Railroads of Massachusetts.*

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COMMONWEALTH OF MASSACHUSETTS,  
BOARD OF RAILROAD COMMISSIONERS,  
No. 20 BEACON STREET.

RULES PRESCRIBED BY THE BOARD OF RAILROAD COMMISSIONERS, UNDER  
SECTION 93, CHAPTER 112, PUBLIC STATUTES, IN REGARD TO RECORDS OF RAILROAD LOCATIONS, AND THE MANNER OF KEEPING THE SAME.

RULE 1. Location maps shall be made upon a scale of not less than four hundred feet to the inch, upon cloth-backed paper, and shall be firmly bound for record in books eighteen (18) inches from top to bottom, and thirty (30) inches from back to front.

RULE 2. Said maps shall show the courses of the tangents and the radii of the curves of the centre line of the railroad in question; the widths of land taken, specifying such width on each side of the centre line; also the courses of the division lines between the lots over which the location is made, and the distance between them on the centre line. Where but one track is laid, the position of such track with reference to the centre line shall also be shown, in order that the boundaries of land may hereafter be determined by measurements from the track as laid, if the same shall not have been changed. Where two tracks are laid, it may be presumed that the centre line is midway between them. NOTE.—The *courses* called for above may be either *magnetic* or *true*, but the maps and descriptions must specify which are given.

RULE 3. The description in writing must in all cases correspond with the map, and the two taken together must have the substantial certainty and precision of a deed. (2 Gray, 580.)



RULE 4. The location shall be certified by the directors of the corporation, or by the president, if authorized by a vote of said directors.

RULE 5. The location, when deposited with the clerk of the county commissioners, shall be kept for preservation and convenient reference in the office of said clerk, in a cabinet used exclusively for that purpose, and furnished with shelves sufficient to allow at least one separate shelf for the maps of each corporation owning a railroad within the county.

RULE 6. A book shall be kept in the office of each clerk, in which shall be recorded the name of every location, the time when it was filed, and the shelf where it is deposited.

RULE 7. No location, after it has once been filed, shall be taken from the office of the clerk for any purpose except upon the order of a court or other proper authority.

Per order,

WM. A. CRAFTS,  
*Clerk.*

NOVEMBER, 1886.

[L.]

## EXPENSES OF OFFICE.

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Rent of office, . . . . .	\$2,500 00
Messenger and care of office, . . . . .	500 00
Experts and other agents, . . . . .	285 70
Printing blanks and circulars, and binding, . . . . .	251 68
Witness fees and expenses of hearings, . . . . .	156 17
Postage, telegrams and express, . . . . .	129 16
Stationery and Directory, . . . . .	103 31
Railroad publications and newspapers, . . . . .	66 75
Copying reports, . . . . .	37 40
Ice, gas and wood, . . . . .	27 05
Watering street, . . . . .	15 00
Sundry incidentals, . . . . .	34 10
	<hr/>
	\$4,106 32

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## BOARD OF RAILROAD COMMISSIONERS.

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THOMAS RUSSELL, Boston, <i>Chairman</i> , . . . . .	Term expires July, 1888
EDWARD W. KINSLEY, Boston, . . . . .	“ “ July, 1887
EVERETT A. STEVENS, Boston, . . . . .	“ “ July, 1889

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*Clerk* — WILLIAM A. CRAFTS, Boston.

*Accountant* — FRED E. JONES, Boston.



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TABULATED STATEMENT

OF

RAILWAY AND RAILROAD

RETURNS.

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## CONTENTS OF TABLES.

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### STREET RAILWAYS.

#### CAPITAL STOCK, DEBT, ETC.

	Column	Page
Capital Stock paid in, . . . . .	1	150
Number of Stockholders, . . . . .	2	150
Funded Debt, . . . . .	3	150
Unfunded Debt, . . . . .	4	150
Gross Debt, . . . . .	5	150
Cash and Cash Assets, . . . . .	6	150
Net Debt, . . . . .	7	150

#### COST OF ROAD, EQUIPMENT, ETC.

Road, . . . . .	8	152
Equipment, . . . . .	9	152
Land and Buildings, . . . . .	10	152
Other Property, . . . . .	11	152
Total Permanent Investments, . . . . .	12	152
Total Property and Assets, . . . . .	13	152

#### PROPERTY ACCOUNTS: ADDITIONS AND REDUCTIONS DURING THE YEAR.

Construction, . . . . .	14	154
Equipment, . . . . .	15	154
Other Property, . . . . .	16	154
Total Additions, . . . . .	17	154
Reductions, . . . . .	18	154
Net Additions, . . . . .	19	154

#### REVENUE FOR THE YEAR.

Passengers, . . . . .	20	156
Rents, . . . . .	21	156
Mail and Express, . . . . .	22	156
Sales of Manure, . . . . .	23	156
Other Sources, . . . . .	24	156
Total Income, . . . . .	25	156



## EXPENSES FOR THE YEAR.

	Column	Page
Repairs of Road-Bed and Track, . . . . .	26	158
Repairs of Equipment, . . . . .	27	158
Repairs of Buildings, . . . . .	28	158
Renewal of Horses, . . . . .	29	158
Salaries, etc., General Office, . . . . .	30	158
Wages, etc., Employees, . . . . .	31	158
Provender, . . . . .	32	158
Taxes, . . . . .	33	160
Rents, . . . . .	34	160
Insurance, . . . . .	35	160
Injuries to Persons and Property, . . . . .	36	160
Other Expenses, . . . . .	37	160
Total Expenses, . . . . .	38	160
Percentage Expenses to Earnings, . . . . .	39	160

## NET INCOME, INTEREST, DIVIDENDS, ETC.

Net income, . . . . .	40	162
Interest accrued, . . . . .	41	162
Dividends declared, . . . . .	42	162
Per cent., . . . . .	43	162
Balance for the Year, . . . . .	44	162
Surplus last Year, . . . . .	45	162
Surplus Sept. 30, 1886, . . . . .	46	162

## EQUIPMENT.

Cars, . . . . .	47	164
Other Vehicles, . . . . .	48	164
Horses, . . . . .	49	164
Harnesses, . . . . .	50	164

## LENGTH OF ROAD.

Main Line, . . . . .	51	164
Sidings, . . . . .	52	164
Total Length, . . . . .	53	164

## MILEAGE, ETC.

Miles run, . . . . .	54	166
Passengers carried, . . . . .	55	166
Round trips, . . . . .	56	166
Average Number of Passengers per Round Trip, . . . . .	57	166
Persons employed, . . . . .	58	166

## ACCIDENTS.

Fatal, . . . . .	59	166
Injured, . . . . .	60	166

## PER MILE OF ROAD OWNED.

	Column	Page
Capital Stock paid in, . . . . .	61	168
Net Debt, . . . . .	62	168
Cost of Construction, . . . . .	63	168

## PER MILE OF ROAD OPERATED.

Cost of Equipment, . . . . .	64	168
Repairs of Road-Bed and Track, . . . . .	65	168
Repairs of Equipment, . . . . .	66	168
Renewals of Horses, . . . . .	67	168

## GROSS INCOME.

Per Mile operated, . . . . .	68	170
Per Round Trip, . . . . .	69	170
Per Mile run, . . . . .	70	170
Per Passenger carried, . . . . .	71	170

## EXPENSES.

Per Mile operated, . . . . .	72	170
Per Round Trip, . . . . .	73	170
Per Mile run, . . . . .	74	172
Per Passenger carried, . . . . .	75	172

## NET INCOME.

Per Mile operated, . . . . .	76	172
Per Round Trip, . . . . .	77	172
Per Mile run, . . . . .	78	172
Per Passenger carried, . . . . .	79	172

---

STEAM RAILROADS.

## LENGTH OF ROAD AND BRANCHES.

Main Line, . . . . .	1	176
Main Line in Massachusetts, . . . . .	2	176
Double Track in Massachusetts, . . . . .	3	176
Double track out of Massachusetts, . . . . .	4	176
Sidings in Massachusetts, . . . . .	5	176
Sidings out of Massachusetts, . . . . .	6	176
Total Length computed as Single Track, . . . . .	7	176

## REPORTS.

Attleborough Branch, . . . . .	35	207
Berkshire, . . . . .	36	207
Boston & Albany, . . . . .	8	184

## REPORTS.

	Column	Page
Boston & Lowell, . . . . .	10	184
Boston & Maine, . . . . .	11	184
Boston & Providence, . . . . .	12	188
Boston, Revere Beach & Lynn, . . . . .	30	204
Boston, Winthrop & Shore, . . . . .	15	188
Central Massachusetts, . . . . .	59	212
Chelsea Beach, . . . . .	60	212
Cheshire, . . . . .	16	192
Connecticut River, . . . . .	17	192
Danvers, . . . . .	61	212
Dorchester & Milton, . . . . .	62	212
Eastern, . . . . .	37	207
Fall River, . . . . .	38	207
Fall River, Warren & Providence, . . . . .	18	192
Fitchburg, . . . . .	9	184
Grafton Centre, . . . . .	31	204
Hanover Branch, . . . . .	19	192
Holyoke & Westfield, . . . . .	39	207
Horn Pond Branch, . . . . .	63	212
Housatonic of Connecticut,* . . . . .	20	196
Lancaster, . . . . .	64	213
Lowell & Andover, . . . . .	40	208
Martha's Vineyard, . . . . .	32	204
Milford, Franklin & Providence, . . . . .	41	208
Milford & Woonsocket, . . . . .	21	196
Monadnock, . . . . .	42	208
Nantasket Beach, . . . . .	22	196
Nantucket, . . . . .	33	204
Nashua & Lowell, . . . . .	43	208
Nashua, Acton & Boston, . . . . .	44	209
Newburyport, . . . . .	65	213
Newburyport City, . . . . .	45	209
New Haven & Northampton, . . . . .	23	196
New London Northern, . . . . .	24	196
New York & Boston Inland, . . . . .	66	213
New York & New England, . . . . .	13	188
New York, New Haven & Hartford, . . . . .	25	200
North Brookfield, . . . . .	46	209
Norwich & Worcester, . . . . .	26	200
Ocean Terminal, . . . . .	67	213
Old Colony, . . . . .	14	188
Pittsfield & North Adams, . . . . .	47	209
Providence & Worcester, . . . . .	27	200
Providence, Webster & Springfield, . . . . .	49	210
Rhode Island & Massachusetts, . . . . .	48	210
Spencer, . . . . .	50	210

\* Operating the Berkshire, Stockbridge &amp; Pittsfield and W. Stockbridge Railroads.

## REPORTS.

	Column	Page
Springfield & New London, . . . . .	51	210
Stockbridge & Pittsfield, . . . . .	52	210
Stony Brook, . . . . .	53	211
Troy & Greenfield & Hoosac Tunnel,* . . . . .	58	212
Union Freight, . . . . .	28	200
Vermont & Massachusetts, . . . . .	54	211
Ware River, . . . . .	55	211
West Amesbury Branch, . . . . .	56	211
West Stockbridge, . . . . .	57	211
Worcester, Nashua & Rochester, . . . . .	29	200
Worcester & Shrewsbury, . . . . .	34	204

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 TABULATED COMPARATIVE RESULTS.

## STOCK, DEBT AND COST PER MILE OF ROAD OWNED.

Stock paid in, . . . . .	68	216
Net Debt, . . . . .	69	216
Total Stock and Net Debt, . . . . .	70	216
Construction, . . . . .	71	216
Equipment, . . . . .	72	216
Total Permanent Investments, . . . . .	73	216

## EARNINGS AND EXPENSES PER MILE OF ROAD OPERATED.

Total Transportation Earnings, . . . . .	74	217
Operating Expenses, . . . . .	75	217
Net Earnings, . . . . .	76	217

## EARNINGS AND EXPENSES PER TOTAL REVENUE TRAIN MILE.

Total Transportation Earnings, . . . . .	77	217
Operating Expenses, . . . . .	78	217
Net Earnings, . . . . .	79	217

## EXPENSES PER TOTAL TRAIN MILE.

Repairs of Road, . . . . .	80	218
New Rails, . . . . .	81	218
Repairs of Bridges, . . . . .	82	218
Repairs of Locomotives, . . . . .	83	218
Fuel, . . . . .	84	218
Oil and Waste, . . . . .	85	218
Repairs of Passenger, Baggage and Mail Cars, . . . . .	86	218
Repairs of Freight Cars, . . . . .	87	218

\* Makes special report to the Legislature.

## REPAIRS.

	Column.	Page.
Per Locomotive, . . . . .	88	219
Per Passenger, Baggage and Mail Car, . . . .	89	219
Per Freight Car, . . . . .	90	219

## AVERAGES, ETC.

Per Passenger; Average Distance travelled, . .	91	219
Per Ton of Freight; Average Distance carried, . .	92	219
Average Number of Passengers per Train Mile, . .	93	219
Average Number of Tons of Freight per Train Mile, .	94	219

## EARNINGS, EXPENSES, NET EARNINGS, ETC.

Passenger Earnings, . . . . .	95	220
Freight Earnings, . . . . .	96	220
Total Transportation Earnings, . . . . .	97	220
Operating Expenses, . . . . .	98	220
Net Earnings, . . . . .	99	220
Per cent. Operating Expenses to Transportation Earnings, . . . . .	100	220



## ABSTRACT OF STREET RAILWAY RETURNS.

STREET RAILWAYS.		CAPITAL STOCK, DEBT, ETC.						
		1.—Capital Stock paid in.	2.—Num-ber of Stock-holders.	3.—Funded Debt.	4.—Unfunded Debt.	5.—Gross Debt.	6.—Cash and Cash Assets.	7.—Net Debt.
1	Acushnet, . . . . .	\$111,600 00	58	—	\$32,773 97	\$32,773 97	\$1,663 28	\$28,110 69
2	Albany Street Freight, . . . . .	50,000 00	8	—	—	—	720 85	—
3	Arlington, . . . . .	13,600 00	24	—	—	—	—	—
4	Brockton, . . . . .	150,000 00	77	\$80,000 00	10,000 00	90,000 00	3,309 37	86,690 63
5	Black Rocks & Salisbury B'h, . . . . .	9,000 00	6	—	—	—	2,074 43	—
6	Boston & Chelsea, . . . . .	121,000 00	90	—	—	—	—	—
7	Boston Consolidated, . . . . .	1,700,000 00	800	850,000 00	450,223 00	1,300,223 00	541,802 23	758,420 77
8	Cambridge, . . . . .	1,600,000 00	738	600,000 00	45,560 28	645,560 28	50,961 02	594,599 26
9	Charles River, . . . . .	350,000 00	131	150,000 00	2,728 57	152,728 57	51,759 34	100,969 23
10	Citizens', . . . . .	100,000 00	8	—	47,506 56	47,506 56	11,043 82	86,462 74
11	Fitchburg, . . . . .	60,000 00	19	—	4,152 79	4,152 79	2,106 64	2,046 15
12	Globe, . . . . .	200,000 00	92	—	76,077 62	76,077 62	13,759 59	62,318 03
13	Gloucester, . . . . .	59,400 00	13	—	23,000 00	23,000 00	3,446 44	19,553 56
14	Havenhill & Groveland, . . . . .	32,000 00	29	—	113,500 00	113,500 00	3,281 16	110,218 84
15	Highland, . . . . .	850,000 00	390	450,000 00	199,025 12	649,025 12	146,009 42	503,015 70
16	Holyoke, . . . . .	25,000 00	46	—	14,000 00	14,000 00	1,387 69	12,612 31
17	Hoosac Valley, . . . . .	50,000 00	9	50,000 00	—	50,000 00	6,475 69	43,524 31
18	Lowell, . . . . .	100,000 00	102	—	6,072 00	6,072 00	20,979 34	—
19	Lowell & Dracut, . . . . .	7,550 00	54	—	—	—	5,995 32	—
20	Lynn & Boston, . . . . .	300,000 00	120	325,000 00	127,598 76	452,598 76	23,361 35	429,237 41
21	Malden & Melrose, . . . . .	165,500 00	51	—	—	—	—	—
22	Merrimack Valley, . . . . .	50,000 00	43	—	—	—	5,009 13	—
23	Metropolitan, . . . . .	2,000,000 00	1,086	1,457,442 12	125,620 89	1,583,063 01	261,258 74	1,321,804 27
24	Middlesex, . . . . .	850,000 00	486	400,000 00	236,713 44	636,713 44	319,995 30	316,718 14
25	Naumkeag, . . . . .	150,000 00	49	300,800 00	17,657 81	318,457 81	87,332 95	231,124 86

26	Natick & Cochrutuate,	25,000 00	61	5,213 48	5,213 48	5,213 48
27	Newton,	*	—	—	—	—
28	New Bedford & Fairhaven,	135,000 00	134	31,671 61	2,077 18	29,594 43
29	Newburyport & Amesbury,	60,000 00	28	5,040 00	5,492 95	43,547 05
30	Northampton,	50,000 00	11	5,350 00	12 82	5,337 18
31	North Woburn,	59,025 00	46	11,598 65	19,028 82	—
32	Onset,	12,580 00	17	—	453 42	—
33	Pittsfield,	33,390 00	46	6,460 47	713 19	5,747 28
34	Salem,	†	—	—	94 69	—
35	Salem & Danvers,	100,000 00	75	31,822 60	4,987 94	26,834 66
36	Somerville,	153,000 00	119	—	—	—
37	South Boston,	750,000 00	468	64,500 00	113,319 07	151,180 93
38	Springfield,	150,000 00	63	39,389 87	15,564 01	23,825 86
39	Stoneham,	33,000 00	13	—	1,007 15	—
40	Taunton,	40,000 00	101	3,000 00	5,502 18	—
41	Waltham & Newton,	30,000 00	89	16,400 00	1,257 52	15,142 48
42	Winnisimmet,	50,000 00	44	114 00	237 35	—
43	Worcester,	40,000 00	28	50,454 56	5,836 56	84,618 00
	Total,†	\$9,125,645 00	4,999	\$1,367,487 49	\$1,276,313 23	\$4,188,416 38
				\$4,097,242 12	\$5,464,729 61	

\* Chartered by special act, ch. 341 of 1886. Capital to be \$50,000, all of which has been subscribed in full, but none as yet paid in.

† The property and franchise of this company was sold to the Naumkeag Street Railway Co., June 1, 1886, and the companies have been consolidated.

‡ Not including Highland and Middlesex Companies.

## ABSTRACT OF STREET RAILWAY RETURNS — Continued.

STREET RAILWAYS.	COST OF ROAD, EQUIPMENT, ETC.					13.—Total Property and Assets.
	8.—Road.	9.—Equipment.	10.—Land and Buildings.	11.—Other Property.	12.—Total Permanent Investments.	
1 Acushnet, . . . . .	\$71,713 47	\$50,331 20	\$19,269 52	—	\$141,314 19	\$145,977 47
2 Albany Street Freight, . . . . .	49,066 29	—	—	—	49,066 29	49,787 14
3 Arlington, . . . . .	13,600 00	—	—	—	13,600 00	13,600 00
4 Brockton, . . . . .	166,192 50	46,202 88	33,541 41	—	245,936 79	249,246 16
5 Black Rocks & Salisbury Beach, . . . . .	5,866 33	2,400 00	380 00	—	8,646 33	10,720 76
6 Boston & Chelsea, . . . . .	121,000 00	—	—	—	121,000 00	121,000 00
7 Boston Consolidated, . . . . .	1,034,190 77	681,184 32	932,227 32	—	2,647,602 41	3,189,404 64
8 Cambridge, . . . . .	1,104,887 31	518,920 14	614,229 70	—	2,238,037 15	2,288,998 17
9 Charles River, . . . . .	224,125 01	144,477 74	70,706 11	\$1,351 60	440,660 46	492,419 80
10 Citizens', . . . . .	95,442 08	29,333 83	14,749 88	—	139,525 79	150,769 61
11 Fitchburg, . . . . .	49,602 27	11,324 10	4,285 58	—	65,211 95	67,318 59
12 Globe, . . . . .	189,242 31	53,900 00	39,093 87	—	282,236 18	295,995 77
13 Gloucester, . . . . .	36,910 84	28,565 90	15,975 06	—	81,451 80	84,898 24
14 Haverhill & Groveland, . . . . .	70,521 45	47,041 88	24,719 00	1,500 00	143,782 33	147,063 49
15 Highland, . . . . .	424,042 68	449,835 36	418,936 22	66,500 00	1,359,314 26	1,505,323 68
16 Holyoke, . . . . .	23,420 19	15,364 09	576 20	—	39,360 48	40,748 17
17 Hoosac Valley, . . . . .	73,960 31	15,464 00	4,100 00	—	93,524 31	100,000 00
18 Lowell, . . . . .	78,488 41	26,286 71	25,751 94	—	130,527 06	151,506 40
19 Lowell & Dracut, . . . . .	1,554 68	—	—	—	1,554 68	7,550 00
20 Lynn & Boston, . . . . .	447,381 66	185,094 79	137,840 69	—	770,317 14	793,678 49
21 Malden & Melrose, . . . . .	74,719 52	—	—	—	74,719 52	74,719 52
22 Merrimack Valley, . . . . .	20,000 00	8,000 00	30,000 00	—	58,000 00	63,009 13
23 Metropolitan, . . . . .	1,643,530 85	961,116 75	1,139,809 01	350,000 00	4,094,456 61	4,355,715 35
24 Middlesex, . . . . .	618,545 29	265,049 38	280,074 68	—	1,163,669 35	1,483,664 65
25 Naumkeag, . . . . .	247,387 17	115,677 34	52,097 55	—	415,162 06	502,495 01

26	Natick & Cochituate, . . . . .	21,550 00	8,276 00	4,500 00	—	34,326 00	34,326 00
27	Newton, . . . . .	—	—	—	—	—	—
28	New Bedford & Fairhaven, . . . . .	111,525 08	49,899 53	39,289 04	—	200,713 65	202,790 83
29	Newburyport & Amesbury, . . . . .	80,761 43	23,431 85	10,850 00	—	115,043 28	124,536 23
30	Northampton, . . . . .	36,000 00	7,927 50	4,375 00	—	48,302 50	48,315 32
31	North Woburn, . . . . .	51,311 93	8,327 66	8,435 65	—	68,075 24	87,104 06
32	Onset, . . . . .	6,039 34	6,748 42	350 53	—	13,138 29	13,591 71
33	Pittsfield, . . . . .	23,033 68	12,445 35	5,497 45	—	40,976 48	41,089 67
34	Salem, . . . . .	—	—	—	—	—	94 69
35	Salem & Danvers, . . . . .	61,260 41	43,406 22	24,090 65	—	128,757 28	133,745 22
36	Somerville, . . . . .	153,000 00	—	—	—	153,000 00	153,000 00
37	South Boston, . . . . .	302,738 14	308,646 04	349,755 94	10,000 00	971,140 12	1,084,459 19
38	Springfield, . . . . .	103,159 40	46,573 06	77,953 13	—	227,685 59	243,249 60
39	Stoneham, . . . . .	33,600 00	9,759 86	3,429 83	1,629 00	48,418 69	49,425 84
40	Taunton, . . . . .	22,000 00	14,000 00	7,000 00	—	43,000 00	48,502 18
41	Waltham & Newton, . . . . .	37,493 41	8,724 37	3,448 88	—	49,666 66	50,924 18
42	Winnisimmet, . . . . .	50,000 00	—	—	—	50,000 00	50,237 35
43	Worcester, . . . . .	104,680 88	47,818 95	42,959 73	—	195,459 56	201,296 12
	Total,* . . . . .	\$7,040,957 12	\$3,536,670 48	\$3,741,288 67	\$364,480 60	\$14,683,396 87	\$15,959,710 10

\* Not including Highland and Middlesex Companies.

## ABSTRACT OF STREET RAILWAY RETURNS — Continued.

STREET RAILWAYS.		PROPERTY ACCOUNTS: ADDITIONS AND REDUCTIONS DURING THE YEAR.					
		14.—Construction.	15.—Equipment.	16.—Other Prop-erty.	17.—Total Addi-tions.	18.—Reductions.	19.—Net Additions.
1	Acushnet, . . . . .	\$17,236 64	\$17,825 85	\$2,674 90	\$37,737 39	—	\$37,737 39
2	Albany Street Freight, . . . . .	—	—	—	—	—	—
3	Arlington, . . . . .	—	—	—	—	—	—
4	Brockton, . . . . .	5,648 62	5,409 44	17,334 59	28,392 65	—	28,392 65
5	Black Rocks & Salisbury Beach, . . . . .	560 99	—	—	560 99	—	560 99
6	Boston & Chelsea, . . . . .	—	—	—	—	—	—
7	Boston Consolidated*, . . . . .	—	4,805 00	166,716 42	171,521 42	38,505 42	133,016 00
8	Cambridge, . . . . .	2,843 52	25,430 68	245 50	28,519 70	5,460 00	23,059 70
9	Charles River, . . . . .	4,858 31	8,096 66	137 94	13,092 94	6,461 50	6,631 44
10	Citizens', . . . . .	95,442 08	29,333 83	14,749 88	139,525 79†	—	139,525 79†
11	Fitchburg, . . . . .	49,602 27	11,324 10	4,285 58	65,211 95	—	65,211 95†
12	Globe, . . . . .	48,564 16	7,518 29	1,477 12	57,559 57	9,736 12	47,823 45
13	Gloucester, . . . . .	36,910 84	28,565 90	15,975 06	81,451 80	—	81,451 80†
14	Haverhill & Groveland, . . . . .	48,948 82	38,170 52	17,783 93	104,903 27	4,511 27	100,392 00
15	Highland,† . . . . .	15,651 90	16,784 48	561 95	32,998 33	—	32,998 33
16	Holyoke, . . . . .	8,910 41	4,213 50	576 20	13,700 11	—	13,700 11
17	Hoosac Valley, . . . . .	73,960 31	15,464 00	4,100 00	93,524 31	—	93,524 31†
18	Lowell, . . . . .	5,046 96	3,941 00	—	8,987 96	2,200 00	6,787 96
19	Lowell & Dracut, . . . . .	1,554 68	—	—	1,554 68	—	1,554 68\$
20	Lynn & Boston, . . . . .	40,099 81	25,065 40	24,159 83	89,325 04	25 00	89,300 04
21	Malden & Melrose, . . . . .	—	—	—	—	—	—
22	Merrimack Valley, . . . . .	—	—	—	—	—	—
23	Metropolitan, . . . . .	23,970 79	8,209 88	300,000 00	332,180 67	151,145 04	181,035 63
24	Middlesex,† . . . . .	10,474 85	11,292 50	2,375 00	24,142 35	375 00	23,767 35
25	Naumkeag, . . . . .	44,963 95	37,128 51	108,401 29	190,493 75	—	190,493 75



26	Natick & Cochituate, . . . . .	-	1,496 00	1,000 00	2,496 00	170 00	2,326 00
27	Newton, . . . . .	-	6,276 69	6,924 14	28,157 62	90 00	28,017 62
28	New Bedford & Fairhaven, . . . . .	14,906 79	23,431 85	-	23,431 85	-	23,431 85
29	Newburyport & Amesbury, . . . . .	-	1,096 90	275 00	1,371 90	10,150 00	8,778 10d
30	Northampton, . . . . .	-	6,115 91	7,193 00	42,302 09	258 00	42,044 09
31	North Woburn, . . . . .	28,993 18	6,748 42	350 53	13,138 29	-	13,138 29†
32	Onset, . . . . .	6,039 34	12,445 35	5,497 45	40,976 48	-	40,976 48†
33	Pittsfield, . . . . .	23,033 68	-	-	-	-	-
34	Salem, . . . . .	1,651 84	11,345 82	10,200 13	23,197 79	800 00	22,397 79
35	Salem & Danvers, . . . . .	-	-	-	-	-	-
36	Somerville, . . . . .	-	18,831 80	-	18,831 80	-	18,831 80
37	South Boston, . . . . .	-	7,054 98	17,756 79	35,681 03	-	35,681 03
38	Springfield, . . . . .	10,869 26	1,124 36	-	1,124 36	-	1,124 36
39	Stoneham, . . . . .	-	-	-	-	3,875 00	3,875 00d
40	Taunton, . . . . .	-	980 00	-	980 00	-	980 00
41	Waltham & Newton, . . . . .	-	-	-	-	-	-
42	Winnisimmet, . . . . .	-	12,278 67	4,872 35	39,446 96	-	39,446 96
43	Worcester, . . . . .	22,295 94	\$107,806 29	\$735,624 58	\$1,786,470 84	\$233,762 35	\$1,552,608 49
	Total, . . . . .	\$643,039 97					

\* For 41 days.

§ Under construction.

† Built during the year.  
d Reduction.

‡ From Oct. 1, 1885, to Aug. 20, 1886.

## ABSTRACT OF STREET RAILWAY RETURNS — Continued.

STREET RAILWAYS.		REVENUE FOR THE YEAR.					
		20.—Passengers.	21.—Rents.	22.—Mail and Express,	23.—Sales of Manure.	24.—Other Sources.	25.—Total Income.
1	Acushnet, . . . . .	\$40,660 68	-	-	\$890 40	\$210 00	\$41,761 08
2	Albany Street Freight, . . . . .	*	-	-	-	612 00	612 00
3	Arlington, . . . . .	†	\$816 00	-	-	-	816 00
4	Brockton, . . . . .	64,763 07	-	-	-	-	66,960 86
5	Black Rocks & Salisbury Beach, . . . . .	5,937 94	-	-	874 19	1,323 60	5,937 94
6	Boston & Chelsea, . . . . .	†	7,260 00	-	-	-	7,260 00
7	Boston Consolidated, \$. . . . .	126,848 27	1,463 40	-	1,102 19	143 75	129,557 61
8	Cambridge, . . . . .	682,369 00	10,110 77	-	6,978 24	2,400 00	701,858 01
9	Charles River, . . . . .	133,234 20	-	-	1,613 05	1,110 96	135,958 21
10	Citizens', . . . . .	9,914 52	-	-	-	-	9,944 52
11	Fitchburg, . . . . .	6,683 27	-	-	39 58	-	6,722 85
12	Globe, . . . . .	103,206 66	-	-	1,022 88	260 00	104,489 54
13	Gloucester, . . . . .	14,556 98	-	-	1 50	50 00	14,608 48
14	Haverhill & Groveland, . . . . .	29,155 66	-	-	178 57	265 50	29,599 73
15	Highland,**. . . . .	518,689 32	1,961 26	-	2,025 21	44,149 77	566,825 56
16	Holyoke, . . . . .	14,817 89	-	-	137 00	184 92	15,139 81
17	Hoosac Valley, . . . . .	††	-	-	-	-	-
18	Lowell, . . . . .	80,722 31	-	-	575 00	729 98	82,027 29
19	Lowell & Dracut, . . . . .	††	-	-	-	-	-
20	Lynn & Boston, . . . . .	414,322 92	858 96	-	2,975 70	-	418,157 58
21	Malden & Melrose, . . . . .	††	-	-	-	-	-
22	Merrimack Valley, . . . . .	48,986 18	-	-	400 00	200 00	49,586 18
23	Metropolitan, . . . . .	1,945,195 67	38,484 30	-	10,945 90	8,908 32	2,003,534 19
24	Middlesex,**. . . . .	350,555 04	10,131 43	-	2,701 18	503 07	363,890 72
25	Naumkeag, . . . . .	134,763 74	1,343 94	-	1,583 46	6,222 15	143,913 29

26	Natick & Cochituate,	12,180 76	—	\$438 67	150 00	247 40	13,016 83
27	Newton,	—	—	—	—	—	—
28	New Bedford & Fairhaven,	77,310 29	—	636 75	1,605 99	200 00	79,753 03
29	Newburyport & Amesbury, §§	8,148 79	4,950 00	—	—	1,878 46	14,977 25
	Lessee's Account,	19,033 51	—	—	240 00	604 87	19,878 38
30	Northampton,	12,757 74	—	212 30	150 00	—	13,120 04
31	North Woburn,	3,823 14	—	156 25	49 00	8 50	4,036 89
32	Onset,	2,305 14	—	—	—	—	2,305 14
33	Pittsfield,	5,562 05	—	—	—	—	5,562 05
34	Salem,		66 67	—	—	—	66 67
35	Salem & Danvers,	45,555 94	—	—	736 17	263 10	46,555 21
36	Somerville,	†	9,180 00	—	—	—	9,180 00
37	South Boston,	534,517 25	2,166 13	—	1,084 50	1,088 20	538,856 08
38	Springfield,	84,355 07	—	—	579 28	2,669 95	87,604 30
39	Stoneham,	18,170 65	—	240 00	184 75	26 67	18,622 07
40	Taunton,	26,255 71	—	—	—	—	26,255 71
41	Waltham & Newton,	11,449 72	—	50 00	100 00	—	11,599 72
42	Winnisimmet,	†	3,000 00	—	—	—	3,000 00
43	Worcester,	84,160 00	33 69	—	661 00	177 54	85,032 23
	Total,	\$5,670,999 08	\$91,826 55	\$1,733 97	\$39,584 74	\$74,438 71	\$5,878,583 05

\* Used only for freight.

§ For 41 days.

\*\* From Oct. 1, 1885, to Aug. 20, 1886.

§§ Leased to and operated by E. P. Shaw until July, 1886, since operated by the company.

|||| Leased to and operated by the Naumkeag until June 1, 1886, when it was purchased and consolidated with the Naumkeag.

† Leased to and operated by the Cambridge.

|| Commenced operating in July, 1886.

‡ Leased to and operated by the Lynn &amp; Boston.

¶ Commenced operating in June, 1886.

‡‡ Leased to and operated by the Middlesex.

## ABSTRACT OF STREET RAILWAY RETURNS — Continued.

		EXPENSES FOR THE YEAR.						
		26.—Repairs of Road-bed and Track.	27.—Repairs of Equipment.	28.—Repairs of Buildings.	29.—Renewal of Horses.	30.—Salaries, etc., General Office.	31.—Wages, etc., Employees.	32.—Provender.
1	Acushnet, . . . . .	—	\$2,570 67	—	—	\$1,169 52	\$19,184 72	\$12,731 66
2	Albany Street Freight, . . . . .	\$236 86	—	—	—	150 00	—	—
3	Arlington, . . . . .	—	—	—	—	—	—	—
4	Brockton, . . . . .	794 32	3,141 16	\$58 58	—	3,493 76	25,126 50	15,192 52
5	Black Rocks & Salisbury Beach, . . . . .	560 99	161 52	—	—	2,297 85	758 35	229 21*
6	Boston & Chelsea, . . . . .	—	—	—	—	—	—	—
7	Boston Consolidated † . . . . .	881 66	5,936 78	424 75	\$2,117 50	5,521 24	39,739 57	11,326 92
8	Cambridge, . . . . .	29,686 76	38,952 30	3,116 48	22,363 70	13,202 56	263,238 74	110,451 39
9	Charles River, . . . . .	304 81	14,404 89	275 58	—	4,436 16	69,120 49	31,796 33
10	Citizens', . . . . .	—	339 80	—	25 00	1,062 00	2,983 91	1,617 08
11	Fitchburg, . . . . .	—	66 85	—	—	374 19	1,470 04	723 94
12	Globe, . . . . .	2,480 42	7,332 05	579 43	3,293 91	3,874 00	32,268 15	14,466 39
13	Gloucester, . . . . .	486 68	538 72	—	—	117 00	5,538 18	3,296 53
14	Haverhill & Groveland, . . . . .	1,676 92	1,790 81	145 00	400 00	1,700 00	8,237 00	4,893 62
15	Highland, † . . . . .	12,935 76	43,746 85	8,981 63	23,370 50	15,666 67	223,077 23	87,422 99
16	Holyoke, . . . . .	585 12	1,009 99	77 70	345 00	875 00	5,873 77	3,185 49
17	Hoosac Valley, . . . . .	—	—	—	—	—	—	—
18	Lowell, . . . . .	8,715 43	5,499 77	2,169 91	3,784 90	3,099 96	25,540 30	10,606 30
19	Lowell & Dracut, . . . . .	—	—	—	—	—	—	—
20	Lynn & Boston, . . . . .	28,977 97	36,901 51	1,464 08	23,581 17	10,649 84	158,906 41	60,173 24
21	Malden & Melrose, . . . . .	—	—	—	—	—	—	—
22	Merrimack Valley, . . . . .	10,456 24	4,631 39	—	2,520 00	1,700 00	14,270 71	7,523 90
23	Metropolitan, . . . . .	66,382 35	175,016 00	37,470 37	56,398 00	29,399 98	851,463 43	289,353 96
24	Middlesex, † . . . . .	15,395 01	28,752 70	2,194 86	17,178 00	16,756 20	119,286 90	61,666 34
25	Naumkeag, . . . . .	3,673 68	9,300 66	621 42	7,123 33	5,458 15	48,621 22	22,237 58

26	Natick & Cohituate,	1,210 25	-	745 00	-	900 00	3,271 79	2,192 70
27	Newton,	-	-	-	-	-	-	-
28	New Bedford & Fairhaven,	1,786 88	5,403 44	312 89	2,655 81	3,320 08	33,634 09	17,700 28
29	Newburyport & Amesbury,	1,753 34	-	-	-	513 19	1,813 38	1,339 12
	Lessee's Account,	529 83	261 32	-	2,949 50	-	5,622 32	4,278 85
30	Northampton,	1,791 16	1,198 00	43 63	719 35	1,000 00	3,282 00	2,539 94
31	North Woburn,	223 19	188 73	35 52	-	1,373 35	1,077 02	55 57
32	Onset,	113 32	7 95	-	-	-	888 85	182 16*
33	Pittsfield,	-	129 60	-	-	250 00	2,250 00	972 00
34	Salem,	-	-	-	-	-	-	-
35	Salem & Danvers,	833 37	2,851 20	205 71	1,540 00	2,050 00	20,719 28	11,683 67
36	Somerville,	-	-	-	-	-	-	-
37	South Boston,	19,692 97	32,610 21	1,741 70	16,470 50	9,199 92	200,382 81	78,239 41
38	Springfield,	6,591 53	5,673 79	393 86	1,652 50	4,875 00	27,087 34	13,654 28
39	Stoneham,	2,159 64	1,668 05	119 78	790 00	2,000 00	5,873 41	3,366 79
40	Taunton,	3,276 57	2,660 31	360 66	-	1,200 00	6,907 85	5,333 29
41	Waltham & Newton,	2,155 68	265 30	-	-	940 00	3,442 44	1,965 06
42	Winnistimmet,	-	-	-	-	-	-	-
43	Worcester,	1,898 30	7,530 62	596 03	3,946 88	4,139 00	26,626 48	12,647 56
	Total,	\$228,247 01	\$440,542 94	\$62,134 57	\$193,225 55	\$152,764 62	\$2,257,584 71	\$905,046 07

\* Coal, wood and water for dummy engine.

† For 41 days.

‡ From Oct. 1, 1885, to Aug. 20, 1886.



## ABSTRACT OF STREET RAILWAY RETURNS — Continued.

EXPENSES FOR THE YEAR—Concluded.									
STREET RAILWAYS.		33.—Taxes.	34.—Rents.	35.—Insurance.	36.—Injuries to Persons and Property.	37.—Other Expenses.	38.—Total Expenses.	39.—Percentage Expenses to Earnings.	
1	Acushnet, . . . . .	\$682 68	—	\$591 35	—	\$1,163 64	\$38,094 24	91	
2	Albany Street Freight, . . . . .	161 98	—	—	—	401 50	950 34	—	
3	Arlington, . . . . .	—	—	—	—	—	—	—	
4	Brookton, . . . . .	3,089 02	—	890 59	\$99 95	2,574 85	54,461 25	80	
5	Black Rocks & Salisbury Beach, . . . . .	130 32	\$300 00	—	—	399 36	4,837 60	—	
6	Boston & Chelsea, . . . . .	—	—	—	—	—	—	—	
7	Boston Consolidated,* . . . . .	—	2,274 72	—	50 00	2,917 79	71,190 93	55	
8	Cambridge, . . . . .	22,811 12	12,640 75	5,750 46	34,139 77	30,490 30	586,844 33	84	
9	Charles River, . . . . .	1,686 42	6,584 42	1,352 22	1,269 86	8,603 35	139,834 53	103	
10	Citizens, . . . . .	144 80	67 38	—	—	641 47	6,881 47	69	
11	Fitchburg, . . . . .	—	—	96 00	—	780 70	3,511 72	52	
12	Globe, . . . . .	3,442 72	—	978 33	763 57	8,076 56	77,555 53	74	
13	Gloucester, . . . . .	18 43	—	466 10	12 11	1,636 49	12,110 24	83	
14	Haverhill & Groveland, . . . . .	230 21	—	448 24	100 00	1,166 25	20,788 05	70	
15	Highland,† . . . . .	14,902 27	18,985 20	5,138 33	6,002 63	30,844 79	491,074 85	87	
16	Holyoke, . . . . .	290 79	—	134 98	—	1,212 91	13,590 75	90	
17	Hoosac Valley, . . . . .	—	—	—	—	—	—	—	
18	Lowell, . . . . .	1,348 76	—	848 17	1,108 95	4,061 60	66,784 05	81	
19	Lowell & Dracut, . . . . .	—	—	—	—	—	—	—	
20	Lynn & Boston, . . . . .	6,779 71	21,911 92	3,280 19	1,254 55	18,389 43	372,270 02	89	
21	Malden & Melrose, . . . . .	—	—	—	—	—	—	—	
22	Merrimack Valley, . . . . .	945 60	—	—	—	1,040 53	43,088 37	87	
23	Metropolitan, . . . . .	34,536 13	7,259 48	12,331 89	28,637 44	64,128 79	1,652,377 82	82	
24	Middlesex,† . . . . .	13,587 15	5,443 59	3,779 35	6,579 69	18,409 68	309,029 47	85	
25	Naumkeag, . . . . .	2,382 20	469 18	1,449 31	526 25	7,881 24	109,744 25	76	

26	Natick & Cochrane, . . .	50 68	-	108 85	-	470 39	8,949 66	69
27	Newton, . . .	-	-	-	-	-	-	-
28	New Bedford & Fairhaven, . . .	1,954 75	-	622 19	602 61	4,076 62	72,069 64	90
29	Newburyport & Amesbury, . . .	216 54	-	-	-	1,869 42	7,504 99	-
30	Lessee's Account, . . .	-	-	160 00	-	-	13,801 82	-
31	Northampton, . . .	84 59	-	-	-	1,543 67	12,202 34	93
32	North Woburn, . . .	-	-	26 39	22 00	529 71	3,531 48	87
33	Onset, . . .	-	-	58 75	-	42 40	1,293 43	-
34	Pittsfield, . . .	-	-	121 25	-	-	3,722 85	-
35	Salem, . . .	-	-	-	-	63 67	66 67	-
36	Salem & Danvers, . . .	1,566 69	1,405 45	147 95	7 00	2,223 22	45,233 54	97
37	Somerville, . . .	-	-	-	-	-	-	-
38	South Boston, . . .	15,898 29	11,470 99	2,902 48	10,114 64	29,877 45	428,601 97	80
39	Springfield, . . .	2,837 11	-	633 03	762 95	1,773 55	65,954 94	75
40	Stoneham, . . .	188 29	-	292 25	128 00	523 03	17,104 24	92
41	Taunton, . . .	442 52	-	261 61	-	1,683 35	22,126 16	84
42	Waltham & Newton, . . .	31 05	-	99 00	-	2,264 78	11,163 31	96
43	Winnisimmet, . . .	-	-	-	-	-	-	-
	Worcester, . . .	920 33	-	630 00	253 88	4,272 82	63,461 90	75
	Total, . . .	\$131,356 15	\$58,813 08	\$43,619 29	\$92,435 85	\$256,038 31	\$4,851,808 15	83

\* For 41 days.

† From Oct. 1, 1885, to Aug. 20, 1886.

## ABSTRACT OF STREET RAILWAY RETURNS — Continued.

STREET RAILWAYS.		NET INCOME, INTEREST, DIVIDENDS, ETC.						
		40. — Net In- come.	41. — Interest Accrued.	42. — Dividends Declared.	43. — Per Cent.	44. — Balance for the Year.	45. — Surplus last Year	46. — Surplus Sept. 30, 1888.
1	Acushnet, . . . . .	\$3,666 84	—	\$2,000 00	2	\$1,666 84	\$63 34 <i>d</i>	\$1,603 50
2	Albany Street Freight, . . . . .	338 34 <i>d</i>	—	—	—	338 34 <i>d</i>	125 48	212 86 <i>d</i>
3	Arlington, . . . . .	816 00	—	816 00	6	—	—	—
4	Brockton, . . . . .	12,499 61	\$2,788 57	15,000 00	10	5,288 96 <i>d</i>	14,535 12	9,246 16
5	Black Rocks & Salisbury Beach, . . . . .	1,100 34	—	—	—	1,100 34	974 09	2,074 43
6	Boston & Chelsea, . . . . .	7,260 00	—	7,260 00	6	—	—	—
7	Boston Consolidated*, . . . . .	58,366 68	645 81	—	—	57,720 87	131,460 77	189,181 64
8	Cambridge, . . . . .	115,013 68	29,168 13	80,000 00	5	5,845 55	37 592 34	43,437 89
9	Charles River, . . . . .	3,876 32 <i>d</i>	6,236 14	—	—	10,112 46 <i>d</i>	**196 31	10,308 77 <i>d</i>
10	Citizens', . . . . .	3,063 05	—	—	—	3,063 05	—	3,063 05
11	Fitchburg, . . . . .	3,211 13	45 33	—	—	3,165 80	—	3,165 80
12	Globe, . . . . .	26,934 01	1,764 74	10,000 00	5	15,169 27	4,748 88 <i>†</i>	19,918 15
13	Gloucester, . . . . .	2,498 24	—	—	—	2,498 24	—	2,498 24
14	Haverhill & Groveland, . . . . .	8,811 68	628 75	2,560 00	8	5,622 93	5,540 56	¶1,563 49
15	Highland,† . . . . .	75,750 71	31,651 38	60,000 00	8	15,900 67 <i>d</i>	22,199 23	6,298 56
16	Holyoke, . . . . .	1,549 06	87 13	1,000 00	4	461 93	1,286 24	1,748 17
17	Hoosac Valley, . . . . .	—	—	—	—	—	—	—
18	Lowell, . . . . .	15,243 24	97 50	5,994 00	6	9,151 74	36,282 66 <i>  </i>	45,434 40
19	Lowell & Draent, . . . . .	—	—	—	—	—	—	—
20	Lynn & Boston, . . . . .	45,887 56	19,536 66	24,000 00	8	2,350 90	¶38,728 83	41,079 73
21	Malden & Melrose, . . . . .	—	—	—	—	—	—	—
22	Merrimack Valley, . . . . .	6,497 81	—	3,000 00	6	3,497 81	9,511 32	13,009 13
23	Metropolitan, . . . . .	351,156 37	82,395 73	120,000 00	8**	148,760 64	††623,891 70	772,652 34
24	Middlesex,† . . . . .	54,861 25	34,332 87	50,000 00	7 <sup>1</sup> / <sub>32</sub>	29,471 6 <i>d</i>	26,422 83	3,048 79 <i>d</i>
25	Naumkeag, . . . . .	34,169 04	6,640 20	15,400 00	22††	12,128 84	21,908 36	34,037 20

26	Natick & Cohituate, . . .	4,067 17	333 33	-	3,733 84	378 68	4,112 52
27	Newton, . . .	-	-	-	-	-	-
28	New Bedford & Fairhaven, . . .	7,683 39	921 24	-	6,762 15	29,357 07	36,119 22
29	New Bedford & Amesbury, . . .	7,472 26	310 05	-	7,162 21	4,334 02	11,496 23
30	Lessee's Account, . . .	6,076 56	-	-	6,076 56	-	6,076 56
31	Northampton, . . .	917 70	-	-	917 70	7,952 38d	7,034 6sd
32	North Woburn, . . .	505 41	-	-	505 41	-	505 41
33	Onset, . . .	1,011 71	-	-	1,011 71	-	1,011 71
34	Pittsfield, . . .	1,839 20	-	-	1,839 20	-	1,839 20
35	Salem, . . .	-	-	-	-	-	-
36	Salem & Danvers, . . .	1,321 67	702 99	6,500 00	5,881 32d	7,803 94	1,922 62
37	Somerville, . . .	9,180 00	-	9,180 00	-	-	-
38	South Boston, . . .	110,254 71	11,923 57	60,000 00	38,331 14	\$31,628 05	69,959 19
39	Springfield, . . .	21,649 36	653 12	12,000 00	8,996 24	44,863 49	53,859 73
40	Stoneham, . . .	1,517 83	-	3,960 00	2,442 17d	18,868 01	16,425 84
41	Taunton, . . .	4,129 55	61 00	2,400 00	1,668 55	\$8,833 63	5,502 18
42	Waltham & Newton, . . .	436 41	-	-	436 41	4,087 77	4,524 18
43	Winnisimmet, . . .	3,000 00	-	3,000 00	-	-	-
44	Worcester, . . .	21,570 33	4,515 48	-	17,054 85	53,786 71	70,841 56
	Total, . . .	\$1,026,774 90	\$235,439 72	\$494,070 00	\$297,265 18	\$1,165,937 75	\$1,453,602 92

\* For 41 days.

† From Oct. 1, 1885, to Aug. 20, 1886.

‡ \$14,385 10 deducted for depreciation.

¶ \$22,328 46 deducted for renewal of stable buildings and cars.

†† \$110,000 deducted for depreciation in buildings and cars.

‡‡ \$3,875 deducted for depreciation in Construction and Equipment Accounts.

¶¶ Paid dividend of \$9,600 out of surplus.

\*\*\* \$12,250 deducted from last year's deficit for premium on bonds.

††† \$10,150 deducted for correction of Construction Account.

‡‡‡ \$9,736.12 deducted for depreciation in Property Accounts.

§§ On \$1,500,000 of Capital Stock.

|| On \$70,000 of Capital Stock.

||| \$10,150 deducted for correction of Construction Account.

d Deficit.

## ABSTRACT OF STREET RAILWAY RETURNS — Continued.

	STREET RAILWAYS.	EQUIPMENT.				LENGTH OF ROAD.		
		47.—Cars.	48.—Other Vehicles.	49.—Horses.	50.—Harnesses.	51.—Main Line.	52.—Sidings.	53.—Total Length.
1	Acushnet, . . . . .	37	1	153	30	6,027	.830	6,857
2	Albany Street Freight, . . . . .	—	—	—	—	.856	.076	.932
3	Arlington, . . . . .	—	—	—	—	1,576	—	1,576
4	Brockton, . . . . .	32	3	132	33	10,566	.896	11,462
5	Black Rocks & Salisbury Beach, . . . . .	5	—	*	—	1,694	.095	1,789
6	Boston & Chelsea, . . . . .	—	—	—	—	4,116	.038	4,154
7	Boston Consolidated, . . . . .	349	12	1,747	533	37,680	3,271	40,951
8	Cambridge, . . . . .	269	19	1,354	434	43,222	.880	44,102
9	Charles River, . . . . .	58	—	325	80	11,106	1,581	12,687
10	Citizens, . . . . .	18	1	81	12	6,595	.632	7,227
11	Fitchburg, . . . . .	7	—	33	13	3,260	.163	3,423
12	Globe, . . . . .	45	6	202	60	12,932	2,566	15,498
13	Gloucester, . . . . .	10	4	92	43	3,720	.350	4,070
14	Haverhill & Groveland, . . . . .	36	4	131	43	12,558	1,226	13,784
15	Highland, . . . . .	199	10	999	278	18,544	.990	19,534
16	Holyoke, . . . . .	10	1	43	8	3,150	.754	3,904
17	Hoosac Valley, . . . . .	8	+	22	15	5,250	—	5,250
18	Lowell, . . . . .	33	7	125	30	6,396	.674	7,070
19	Lowell & Dracut, . . . . .	—	—	—	—	.380	—	.380
20	Lynn & Boston, . . . . .	175	9	748	212	39,467	2,713	42,180
21	Malden & Melrose, . . . . .	—	—	—	—	4,573	.475	5,048
22	Merrimack Valley, . . . . .	20	4	70	16	5,800	.900	6,700
23	Metropolitan, . . . . .	687	17	3,543	1,014	79,847	7,272	87,119
24	Middlesex, . . . . .	150	18	716	180	19,136	2,281	21,417
25	Naumkeag, . . . . .	81	16	273	100	21,319	3,059	24,378



26	Natick & Cohituate, . . .	7	6	17	5	3,000	200	3,200
27	Newton, . . .	—	—	—	—	—	—	—
28	New Bedford & Fairhaven, . . .	46	5	161	39	9,060	720	9,780
29	Newburyport & Amesbury, . . .	14†	3	48	20	6,600	200	6,800
30	Northampton, . . .	8	4	29	5	3,200	30	3,230
31	North Woburn, . . .	8	2	21	9	4,730	90	4,820
32	Onset, . . .	5	1	8	—	1,300	125	1,425
33	Pittsfield, . . .	8	—	36	13	3,300	300	3,600
34	Salem, . . .	—	—	—	—	—	—	—
35	Salem & Danvers, . . .	24	2	117	30	8,800	480	9,280
36	Somerville, . . .	—	—	—	—	4,879	526	5,405
37	South Boston, . . .	199	—	903	350	13,015	205	13,220
38	Springfield, . . .	30	9	151	35	9,180	190	9,370
39	Stoneham, . . .	11	1	29	9	2,680	950	2,730
40	Taunton, . . .	14	3	43	15	4,090	284	4,374
41	Waltham & Newton, . . .	7	5	18	6	3,211	190	3,401
42	Winnisimmet, . . .	—	—	—	—	1,883	73	1,956
43	Worcester, . . .	28	5	142	29	6,631	372	7,003
Total.¶ . . .		2,289	150	10,789	3,211	407,649	32,486	440,135

\* One dummy engine.

† Two Baldwin noiseless street car motors.

‡ Two motors.

§ Equipment is now the property of the company.

|| Not including Highland and Middlesex Companies.

## ABSTRACT OF STREET RAILWAY RETURNS — Continued.

	STREET RAILWAYS	MILEAGE, ETC.				ACCIDENTS.		
		54. — Miles run.	55. — Passengers Carried.	56. — Round Trips.	57. — Average No. of Passengers per Round Trip.	58. — Persons Employed.	59. — Fatal.	60. — Injured.
1	Acushnet,	263,251	829,755	37,081	22	48	—	1
2	Albany Street Freight,	—	—	—	—	—	—	—
3	Arlington,	—	—	—	—	—	—	—
4	Brockton,	216,638	1,224,418	17,904	69	46	—	—
5	Black Rocks & Salisbury B'h,	5,096	68,061	1,274	—	6	—	—
6	Boston & Chelsea,	—	—	—	—	—	—	—
7	Boston Consolidated,*	399,411	2,584,861	49,518	50	724	—	—
8	Cambridge,	2,440,911	12,631,641	294,585	43	511	1	8
9	Charles River,	637,221	2,598,551	87,687	30	150	—	2
10	Citizens,	36,613	205,581	8,507	24	38	—	—
11	Fitchburg,	16,581	104,091	3,437	30	15	—	—
12	Globe,	346,145	2,092,541	74,176	28	72	1	3
13	Gloucester,	38,211	261,823	7,858	33	41	—	—
14	Haverhill & Groveland,	85,867	436,212	17,250	25	40	—	1
15	Highland,†	1,949,184	10,727,092	257,557	42	404	—	2
16	Holyoke,	67,163	273,446	16,572	17	19	—	—
17	Hoosac Valley,	—	—	—	—	—	—	—
18	Lowell,	240,021	1,571,192	24,002	65	62	—	—
19	Lowell & Dracut,	—	—	—	—	—	—	—
20	Lynn & Boston,	1,307,047	7,756,115	150,634	51	295	—	7
21	Malden & Melrose,	—	—	—	—	—	—	—
22	Merrimack Valley,	190,618	783,818	38,123	26	25	—	—
23	Metropolitan,	6,991,048	39,582,061	1,060,062	37	1,718	4	28
24	Middlesex,†	1,056,927	7,124,066	153,720	46	325	—	—
25	Naumkeag,	341,665	2,669,101	67,551	40	75	—	9

26	Natick & Cohituate,	17,541	193,577	5,847	33	7	-	-	-
27	Newton,	-	-	-	-	-	-	-	-
28	New Bedford & Fairhaven,	377,981	1,585,315	79,549	20	71	-	-	4
29	Newburyport & Amesbury,	35,486	386,784	6,452	-	17	-	-	-
30	Northampton,	45,174	164,997	7,059	23	8	-	-	-
31	North Woburn,	19,000	78,731	3,809	21	7	-	-	-
32	Onset,	1,998	24,280	999	-	6	-	-	-
33	Pittsfield,	10,080	100,965	1,260	-	15	-	-	-
34	Salem,	-	-	-	-	-	-	-	-
35	Salem & Danvers,	183,737	713,127	17,595	40	37	-	-	5
36	Somerville,	-	-	-	-	-	-	-	-
37	South Boston,	1,630,459	10,998,508	247,308	45	400	-	3	8
38	Springfield,	282,785	1,641,452	60,104	27	65	-	-	5
39	Stoneham,	48,500	219,451	9,700	23	15	-	-	-
40	Taunton,	94,352	526,423	16,416	32	15	-	-	-
41	Waltham & Newton,	32,590	188,189	4,239	44	7	-	-	-
42	Winnisimmet,	-	-	-	-	-	-	-	-
43	Worcester,	252,374	1,741,159	50,170	35	60	-	-	3
	Total,	19,661,675	112,087,384	2,878,005	39	4,615	-	9	86

† From Oct. 1, 1885 to Aug. 20, 1886.

\* For 41 days.

## COMPARATIVE STATEMENTS FROM STREET RAILWAY RETURNS.

	STREET RAILWAYS.	PER MILE OF ROAD OWNED.			PER MILE OF ROAD OPERATED.			
		61.—Capital Stock Paid in	62.—Net Debt.	63.—Cost of Construction.	64.—Cost of Equipment	65.—Repairs of Road-bed and Track.	66.—Repairs of Equipment.	67.—Renewals of Horses.
1	Acushnet, . . . . .	\$18,516 67	\$4,664 12	\$11,898 70	\$7,881 49	—	\$402 55	—
2	Albany Street Freight, . . . . .	58,411 20	—	57,320 40	—	—	—	—
3	Arlington, . . . . .	8,629 44	—	8,629 44	—	—	—	—
4	Brockton, . . . . .	14,196 48	8,204 68	15,728 99	4,372 79	\$75 18	297 29	—
5	Black Rocks & Salisbury Beach, . . . . .	—	—	—	—	—	—	—
6	Boston & Chelsea, . . . . .	29,397 47	—	29,397 47	—	—	—	—
7	Boston Consolidated, . . . . .	45,116 77	20,127 94	27,416 68	13,360 75	17 29	116 44	\$41 53
8	Cambridge, . . . . .	37,019 90	13,757 50	25,564 26	10,968 29	575 99	755 77	433 91
9	Charles River, . . . . .	31,514 50	9,091 41	20,180 53	7,872 99	16 61	784 96	—
10	Citizens', . . . . .	15,163 00	5,528 85	14,471 88	3,304 48	—	38 28	2 82
11	Fitchburg, . . . . .	18,494 91	626 67	15,215 42	3,473 65	—	20 51	—
12	Globe, . . . . .	15,465 51	4,818 90	14,633 65	5,365 85	246 93	729 92	327 92
13	Gloucester, . . . . .	15,967 74	5,256 33	9,922 27	7,679 01	139 83	144 82	—
14	Haverhill & Groveland, . . . . .	2,548 18	8,776 78	5,615 66	3,745 97	133 53	142 60	31 85
15	Highland, . . . . .	45,846 82	27,131 37	22,871 75	18,175 17	522 66	1,767 55	944 26
16	Holyoke, . . . . .	7,936 51	4,003 91	7,434 98	4,877 50	185 75	320 63	109 52
17	Hoosac Valley, . . . . .	—	—	—	—	—	—	—
18	Lowell, . . . . .	15,634 77	—	12,271 48	4,109 87	1,362 64	859 88	591 76
19	Lowell & Draut, . . . . .	—	—	—	—	—	—	—
20	Lynn & Boston, . . . . .	7,600 71	10,875 03	11,334 73	3,747 62	586 72	747 15	477 45
21	Malden & Melrose, . . . . .	43,188 94	—	49,498 83	—	—	—	—
22	Merrimack Valley, . . . . .	8,620 69	—	3,448 28	1,379 31	1,802 80	798 51	434 48
23	Metropolitan, . . . . .	25,047 90	16,554 21	20,583 50	11,250 08	777 02	2,048 60	660 15
24	Middlesex, . . . . .	44,418 90	16,550 91	32,323 65	9,965 76	578 85	1,081 09	645 89
25	Naumkeag, . . . . .	7,035 98	10,841 26	11,604 07	5,426 02	172 32	436 26	334 13

26	Natick & Cohituate,	8,333 34	1,737 83	7,183 34	2,758 67	-	403 42	248 34
27	Newton,	-	-	-	-	-	-	-
28	New Bedford & Fairhaven,	14,900 66	3,266 49	12,309 61	5,507 67	197 23	596 41	293 14
29	Newburyport & Amesbury,	9,090 91	6,598 03	12,236 58	-	-	-	-
30	Northampton,	15,625 00	1,667 87	11,250 00	2,477 34	559 74	374 38	224 80
31	North Woburn,	12,478 86	-	10,848 19	1,760 60	47 19	39 90	-
32	Onset,	-	-	-	-	-	-	-
33	Pittsfield,	-	-	-	-	-	-	-
34	Salem,	-	-	-	-	-	-	-
35	Salem & Danvers,	11,363 64	3,049 39	6,961 41	3,184 61	61 14	209 19	112 99
36	Somerville,	31,358 90	-	31,358 90	-	-	-	-
37	South Boston,	57,625 82	11,615 90	23,260 71	19,934 51	1,271 90	2,106 19	1,063 78
38	Springfield,	16,339 87	2,595 41	11,237 41	5,073 32	718 03	618 06	180 01
39	Stoneham,	12,313 43	-	12,537 31	3,641 74	- 805 84	622 41	294 78
40	Taunton,	9,775 95	-	5,378 97	3,422 98	801 12	650 44	-
41	Waltham & Newton,	9,342 85	4,716 66	11,676 55	2,717 87	671 55	82 65	-
42	Winnisimmet,	26,550 55	-	26,550 55	-	-	-	-
43	Worcester,	6,032 27	12,760 97	15,786 59	7,211 42	286 28	1,135 67	595 22
	Average,	\$22,386 04	\$10,274 57	\$17,272 11	\$8,096 42	\$522 52	\$1,008 53	\$412 35



## COMPARATIVE STATEMENTS FROM STREET RAILWAY RETURNS — Continued.

	STREET RAILWAYS.	GROSS INCOME.				EXPENSES.	
		69. — Per Mile Operated.	69. — Per Round Trip.	70. — Per Mile Run.	71. — Per Passenger Carried.	72. — Per Mile Operated.	73. — Per Round Trip.
1	Acushnet, . . . . .	\$6,539 47	\$1 13	\$0.1588	\$0.0501	\$5,965 27	\$1 03
2	Albany Street Freight, . . . . .	—	—	—	—	—	—
3	Arlington, . . . . .	—	—	—	—	—	—
4	Brockton, . . . . .	6,337 39	3 74	.3085	.0547	5,154 39	3 04
5	Black Rocks & Salisbury Beach, . . . . .	—	—	—	—	—	—
6	Boston & Chelsea, . . . . .	—	—	—	—	—	—
7	Boston Consolidated*, . . . . .	2,541 34	2 59	.3247	.0501	1,396 45	1 42
8	Cambridge, . . . . .	13,617 73	2 38	.2875	.0556	11,386 19	1 99
9	Charles River, . . . . .	7,408 76	1 54	.2134	.0523	7,620 00	1 59
10	Citizens', . . . . .	1,120 26	1 17	.2688	.0483	775 20	81
11	Fitchburg, . . . . .	2,062 22	1 95	.3954	.0646	1,077 21	1 02
12	Globe, . . . . .	10,402 14	1 40	.3020	.0499	7,720 81	1 04
13	Gloucester, . . . . .	3,927 01	1 86	.3844	.0558	3,255 44	1 54
14	Haverhill & Groveland, . . . . .	2,357 04	1 72	.3441	.0679	1,655 36	1 21
15	Highland,† . . . . .	22,902 04	2 20	.2909	.0529	19,841 41	1 90
16	Holyoke, . . . . .	4,806 29	91	.2259	.0555	4,314 52	82
17	Hoosac Valley, . . . . .	—	—	—	—	—	—
18	Lowell, . . . . .	12,824 78	3 42	.3418	.0522	10,441 53	2 78
19	Lowell & Dracut, . . . . .	—	—	—	—	—	—
20	Lynn & Boston, . . . . .	8,466 44	2 77	.3199	.0539	7,537 36	2 46
21	Malden & Melrose, . . . . .	—	—	—	—	—	—
22	Merrimack Valley, . . . . .	8,549 34	1 30	.2544	.0633	7,429 03	1 13
23	Metropolitan, . . . . .	23,451 80	1 89	.2866	.0506	19,341 44	1 56
24	Middlesex,† . . . . .	13,682 16	2 36	.3433	.0511	11,619 39	2 00
25	Naumkeag, . . . . .	6,750 47	2 11	.4208	.0539	5,147 72	1 61

26	Natick & Coehituate, . . . . .	4,338 94	2 23	.7231	.0671	2,983 22	1 53
27	Newton, . . . . .	—	—	—	—	—	—
28	New Bedford & Fairhaven, . . . . .	8,802 76	1 00	.2110	.0503	7,954 71	90
29	Newburyport & Amesbury, . . . . .	—	—	—	—	—	—
30	Northampton, . . . . .	4,100 01	1 86	.2916	.0795	3,813 23	1 73
31	North Woburn, . . . . .	853 46	1 06	.2125	.0512	746 61	93
32	Onset, . . . . .	—	—	—	—	—	—
33	Pittsfield, . . . . .	—	—	—	—	—	—
34	Salem, . . . . .	—	—	—	—	—	—
35	Salem & Danvers, . . . . .	3,415 64	2 58	.2530	.0652	3,318 67	2 51
36	Somerville, . . . . .	—	—	—	—	—	—
37	South Boston, . . . . .	34,803 08	2 18	.3306	.0490	27,682 06	1 73
38	Springfield, . . . . .	9,542 95	1 45	.3095	.0534	7,184 63	1 09
39	Stonham, . . . . .	6,918 54	1 92	.3840	.0850	6,382 18	1 76
40	Taunton, . . . . .	6,419 49	1 60	.2793	.0499	5,409 82	1 35
41	Waltham & Newton, . . . . .	3,613 62	2 74	.3558	.0617	3,477 66	2 63
42	Winnisimmet, . . . . .	—	—	—	—	—	—
43	Worcester, . . . . .	12,823 44	1 69	.3374	.0488	9,570 48	1 26
Average, . . . . .		\$13,457 71	\$2 04	\$0.2939	\$0.0525	\$11,107 14	\$1 69

† From Oct. 1, 1885, to Aug. 20, 1886.

\* For 41 days.

## COMPARATIVE STATEMENTS OF STREET RAILWAY RETURNS—Concluded.

		EXPENSES—Continued.		NET INCOME.			
		74.—Per Mile Run.	75.—Per Passenger Carried.	76.—Per Mile Operated.	77.—Per Round Trip.	78.—Per Mile Run.	79.—Per Passenger Carried.
STREET RAILWAYS.							
1	Acushnet, . . . . .	\$0.1448	\$0.0459	\$574 20	\$0.10	\$0.0140	\$9,0042
2	Albany Street Freight, . . . . .	—	—	—	—	—	—
3	Arlington, . . . . .	—	—	—	—	—	—
4	Brockton, . . . . .	.2509	.0445	1,188 00	.70	.0576	.0102
5	Black Rocks & Salisbury Beach, . . . . .	—	—	—	—	—	—
6	Boston & Chelsea, . . . . .	—	—	—	—	—	—
7	Boston Consolidated,* . . . . .	.1784	.0271	1,144 89	1.17	.1463	.0280
8	Cambridge, . . . . .	.2404	.0465	2,231 54	.39	.0471	.0091
9	Charles River, . . . . .	.2195	.0538	211 24d	.05d	.0061d	.0015d
10	Citizens', . . . . .	.1860	.0334	345 06	.36	.0828	.0149
11	Fitchburg, . . . . .	.2065	.0337	985 01	.93	.1889	.0309
12	Globe, . . . . .	.2241	.0370	2,681 33	.86	.0779	.0129
13	Gloucester, . . . . .	.3187	.0462	671 57	.32	.0657	.0096
14	Haverhill & Groveland, . . . . .	.2417	.0477	701 68	.51	.1024	.0202
15	Highland,† . . . . .	.2519	.0458	3,060 63	.30	.0390	.0071
16	Holyoke, . . . . .	.2028	.0498	491 77	.09	.0231	.0057
17	Hoosac Valley, . . . . .	—	—	—	—	—	—
18	Lowell, . . . . .	.2782	.0425	2,383 25	.64	.0636	.0097
19	Lowell & Dracut, . . . . .	—	—	—	—	—	—
20	Lynn & Boston, . . . . .	.2848	.0480	929 08	.31	.0351	.0059
21	Malden & Melrose, . . . . .	—	—	—	—	—	—
22	Merrimack Valley, . . . . .	.2204	.0550	1,120 31	.17	.0340	.0083
23	Metropolitan, . . . . .	.2364	.0417	4,110 36	.33	.0302	.0089
24	Middlesex,† . . . . .	.2923	.0434	2,002 77	.36	.0510	.0077
25	Naumkeag, . . . . .	.3209	.0411	1,602 75	.50	.0999	.0128

26	Natick & Cohituate,	.	.	.	.	.	.4972	.0461	1,355 72	.70	.2259	.0210
27	Newton,	.	.	.	.	.	—	—	—	—	—	—
28	New Bedford & Fairhaven,	.	.	.	.	.	†1907	.0455	848 05	.10	.0203	.0048
29	Newburyport & Amesbury,	.	.	.	.	.	—	—	—	—	—	—
30	Northampton,	.	.	.	.	.	.2712	.0739	286 78	.13	.0204	.0056
31	North Woburn,	.	.	.	.	.	.1859	.0448	106 85	.13	.0266	.0064
32	Onset,	.	.	.	.	.	—	—	—	—	—	—
33	Pittsfield,	.	.	.	.	.	—	—	—	—	—	—
34	Salem,	.	.	.	.	.	—	—	—	—	—	—
35	Salem & Danvers,	.	.	.	.	.	.2458	.0634	96 97	.07	.0072	.0018
36	Somerville,	.	.	.	.	.	—	—	—	—	—	—
37	South Boston,	.	.	.	.	.	.2630	.0390	7,121 02	.45	.0676	.0100
38	Springfield,	.	.	.	.	.	.2330	.0402	2,358 32	.36	.0765	.0132
39	Stoneham,	.	.	.	.	.	.3527	.0781	566 36	.16	.0313	.0069
40	Taunton,	.	.	.	.	.	.2354	.0421	1,009 67	.25	.0439	.0078
41	Waltham & Newton,	.	.	.	.	.	.3424	.0594	135 96	.11	.0134	.0023
42	Winnisimmet,	.	.	.	.	.	—	—	—	—	—	—
43	Worcester,	.	.	.	.	.	.2518	.0364	3,252 96	.43	.0856	.0124
	Average,	.	.	.	.	.	\$0.2467	\$0.0433	\$2,350 57	\$0.35	\$0.0522	\$0.0092

\* For 41 days.

† From Oct. 1, 1885, to Aug. 20, 1886.

d Deficit.





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TABULATED STATEMENT

COMPILED FROM

RETURNS OF RAILROADS.

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[175]

RAILROADS AND BRANCHES. (BRANCHES IN ITALICS)	WHERE LOCATED.		LENGTH.		DOUBLE TRACK.		SIDINGS.		7.—Total length com- puted as single track.
	From.	To.	1.—Total.	2.—In Mass.	3.—In Mass.	4.—Out of Mass.	5.—In Mass.	6.—Out of Mass.	
ATTLEBOROUGH BRANCH. (See <i>Boston &amp; Providence</i> ).									
BERKSHIRE. (See <i>Housatonic</i> ).									
BOSTON & ALBANY.									
<i>Athol</i> .	Boston.	Albany, N. Y.	201.650	162.350	162.350	39.300	188.930	32.470	743.470
<i>Grand Junction</i> .	Springfield.	Athol.	46.510	46.510	—	—	—	—	—
<i>Newton Lower Falls</i> .	Cottage Farm.	East Boston.	9.300	9.300	5.060	—	—	—	—
<i>Newton Highlands</i> .	Riverside Junc.	Newton L. Falls.	1.100	1.100	—	—	—	—	—
<i>Saxonville</i> .	Beacon St., Bos- ton.	Riverside Jct.	9.890	9.890	9.880	—	—	—	—
<i>Milford</i> .	Natick.	Saxonville.	3.700	3.700	—	—	—	—	—
<i>Milbury</i> .	S. Framingham.	Milford.	12.	12.	—	—	—	—	—
<i>Chatham &amp; Hudson</i> .	Millbury Junc.	Millbury Village.	3.	3.	—	—	—	—	—
North Brookfield.	Chatham, N. Y.	Hudson, N. Y.	17.330	—	—	1.	—	—	—
Pittsfield & North Adams.	E. Brookfield.	N. Brookfield.	4.160	4.160	—	—	.490	—	4.650
Providence, Webster & Springfield.	Pittsfield.	North Adams.	18.550	18.550	—	—	4.930	—	23.480
Ware River.	North Webster.	Auburn Station.	10.110	10.110	—	—	1.130	—	11.240
Spencer.	Palmer.	Winchendon.	49.350	49.350	—	—	5.610	—	54.960
BOSTON & LOWELL.	Spencer.	B. & A. R.R.	2.165	2.165	—	—	.745	—	2.910
<i>Lexington &amp; Arlington</i> .	Boston.	Lowell.	26.750	26.750	26.750	—	54.610	—	194.900
<i>Stoneham</i> .	Medford Junc.	Lexington.	9.250	9.250	9.250	—	—	—	—
<i>Woburn</i> .	Woburn Junc.	Stoneham.	2.500	2.500	2.500	—	—	—	—
<i>Mystic</i> .	Winchester.	N. Woburn Jct.	6.200	6.200	6.200	—	—	—	—
<i>Lawrence</i> .	Milk Row Junc.	Mystic Wharves.	3.210	3.210	—	—	—	—	—
<i>Middlesex Central</i> .	Lexington.	In Wilmington.	11.080	11.080	—	—	—	—	—
<i>Salem &amp; Lowell</i> .	Tewksbury.	Concord.	16.800	16.800	—	—	—	—	—
<i>Lowell &amp; Lawrence</i> .	Lowell.	Peabody.	12.420	12.420	—	—	—	—	—
<i>Bedford &amp; Littleton</i> .	Bedford.	S. Lawrence.	7.630	7.630	—	—	—	—	—



RAILROADS AND BRANCHES. (BRANCHES IN ITALICS.) (Continued.)	WHERE LOCATED.		LENGTH.		DOUBLE TRACK.		SIDINGS.		7.—Total length com- puted as single track.
	From.	To.	1.—Total.	2.—In Mass.	3.—In Mass.	4.—Out of Mass.	5.—In Mass.	6.—Out of Mass.	
BOSTON & PROVIDENCE, <i>West Roxbury,</i>	Boston,	Providence, R.I.,	44.	38.142	38.142	5.858	40.000	12.000	159.752
<i>Dedham,</i>	Forest Hills Sta'n,	Dedham,	5.366	5.366	—	—	—	—	—
<i>Sloughdon,</i>	Readville,	Dedham,	2.224	2.224	—	—	—	—	—
<i>India Point,</i>	Canton,	Sloughdon,	4.114	4.114	—	—	—	—	—
Attleborough Branch,	Seekonk,	Providence, R.I.,	8.048	3.485	—	—	—	—	—
BOSTON, WINTHROP & SHORE, <i>Narrow Gauge,</i>	Attleborough,	N. Attleborough,	4.	4.	—	—	1.	—	5.
<i>Wide Gauge,</i>	Point Shirley,	Point of Pines,	6.410	6.410	—	—	.810	—	9.460
CENTRAL MASSACHUSETTS,	Ocean Spray,	Winthrop J.,	1.780	1.780	—	—	—	—	—
CHESHIRE,	Crescent Beach,	Revere J.,	.460	.460	—	—	—	—	—
Monadnock,	Cambridge,	Jeffersons,	44.030	44.030	—	—	3.130	—	47.160
CHELSEA BEACH (See <i>Eastern</i> ),	S. Ashburnham,	Bellows Falls, Vt.,	53.623	10.810	—	—	3.170	—	70.630
CONNECTICUT RIVER,	Winchendon,	Peterboro', N.H.,	15.800	2.038	—	—	—	.700	16.500
<i>Chicopee Falls,</i>	—	—	—	—	—	—	—	—	—
<i>Easthampton,</i>	Springfield,	S. Vernon, Vt.,	50.	50.	36.000	—	41.440	—	133.290
DANVERS. (See <i>Boston &amp;</i>	Chicopee,	Chicopee Falls,	2.350	2.350	—	—	—	—	—
<i>Maine</i> ),	Mt. Tom June.,	Easthampton,	3.500	3.500	—	—	—	—	—
DORCHESTER & MILTON. (See	—	—	—	—	—	—	—	—	—
<i>Old Colony</i> ),	—	—	—	—	—	—	—	—	—
EASTERN. (See <i>Boston &amp;</i>	—	—	—	—	—	—	—	—	—
<i>Maine</i> ),	—	—	—	—	—	—	—	—	—
FALL RIVER. (See <i>Old Colony</i> ),	—	—	—	—	—	—	—	—	—
FALL RIVER, WARREN &	—	—	—	—	—	—	—	—	—
PROVIDENCE (owned by	—	—	—	—	—	—	—	—	—
<i>Old Colony Railroad Co.</i> ),	Fall River,	Warren, R. I.,	5.794	3.652	—	—	.040	.480	6.314

FITCHBURG,	Boston,	Fitchburg,	50.	50.	50.	81.660	1.410	267.320
<i>Ashburnham,</i>	—	In Ashburnham,	2.590	2.590	—	—	—	—
<i>Ice,</i>	—	In Charlestown,	.680	.680	.680	—	—	—
<i>Watertown Branch,</i>	N. Cambridge,	Waltham,	8.260	8.260	—	—	—	—
<i>Lancaster &amp; Marlborough,</i>	South Acton,	Marlborough,	12.420	12.420	—	—	—	—
<i>Peterborough &amp; Shirley,</i>	Ayer,	Greenville, N.H.,	23.620	14.250	—	—	—	—
<i>Worcester,</i>	Worcester,	Winchendon,	36.	36.	—	—	—	—
Vermont & Massachusetts,	Fitchburg,	Greenfield,	56.	56.	54.200	28.030	—	141.030
<i>Turner's Falls,</i>	Greenfield,	Turner's Falls,	2.800	2.800	—	—	—	—
HANOVER BRANCH,	N. Abington,	South Hanover,	8.	8.	—	1.	—	9.
HOLYOKE & WESTFIELD. (See	—	—	—	—	—	—	—	—
<i>N. Haven &amp; Northampton),</i>	—	—	—	—	—	—	—	—
HORN POND BRANCH. (See	—	—	—	—	—	—	—	—
<i>Boston &amp; Lowell),</i>	—	—	—	—	—	—	—	—
HOUSATONIC (Ct.),	W. Stockbridge,	State Line of Ct.,	21.030	21.030	—	4.490	—	25.520
Berkshire,	Vandusenville,	Pittsfield,	22.930	22.930	—	4.990	—	27.920
Stockbridge & Pittsfield,	W. Stockbridge,	State Line, N.Y.,	2.640	2.640	—	2.380	—	5.020
West Stockbridge,	—	—	—	—	—	—	—	—
LOWELL & ANDOVER. (See	—	—	—	—	—	—	—	—
<i>Boston &amp; Maine.)</i>	—	—	—	—	—	—	—	—
MILFORD, FRANKLIN & PROV.	—	—	—	—	—	—	—	—
(See <i>Milford &amp; Woonsocket</i> ),	—	—	—	—	—	—	—	—
MILFORD & WOONSOCKET,	Ashland,	Bellingham,	15.327	15.327	—	1.606	—	16.933
Milford, Franklin & Prov.,	Franklin,	Bellingham,	4.600	4.600	—	.407	—	5.007
MONADNOCK. (See <i>Cheshire</i> ),	—	—	—	—	—	—	—	—





[illegible]



	Greenfield, B. & L. R. R.,	In Vermont, State Line, Vt., Old Colony R.R.,	-	44. 2.431	-	44,000 .937	-	-	-	22.520 1.280	-	-	6.170 110.520 4 648
SOUTHERN VERMONT,	-	-	-	6.170	-	-	-	-	-	-	-	-	-
TROY & GREENFIELD,	-	-	-	44.	-	-	-	-	-	-	-	-	-
UNION FREIGHT,	-	-	-	2.431	-	-	-	-	-	-	-	-	-
VERMONT & MASSACHUSETTS, (See <i>Fitchburg</i> ),	-	-	-	-	-	-	-	-	-	-	-	-	-
WARE RIVER. (See <i>Boston &amp; Albany</i> ),	-	-	-	-	-	-	-	-	-	-	-	-	-
WEST AMESBURY BRANCH, (See <i>Boston &amp; Maine</i> ),	-	-	-	-	-	-	-	-	-	-	-	-	-
WEST STOCKBRIDGE. (See <i>Housatonic</i> ),	-	-	-	-	-	-	-	-	-	-	-	-	-
WORCESTER, NASHUA & ROCH- ESTER. (See <i>Boston &amp; Maine</i> ),	-	-	-	-	-	-	-	-	-	-	-	-	-
NARROW GAUGE.													
BOSTON, REVERE BEACH & LYNN,	East Boston,	Lynn,	8.800	8.800	8.800	8.800	8.300	2.250	-	2.250	-	-	19.600
GRAFTON CENTRE,	Grafton Station,	Grafton Centre,	3.	3.	3.	3.	-	.100	-	.100	-	-	3.100
MARTIN'S VINEYARD,	Oak Bluffs,	Katama,	8.330	8.330	8.330	8.330	-	.500	-	.500	-	-	9.280
<i>Katama</i> ,	Katama,	South Beach,	.450	.450	.450	.450	-	-	-	-	-	-	-
NANTUCKET,	Nantucket,	Siasconset,	11.160	11.160	11.160	11.160	-	.800	-	.800	-	-	11.960
WORCESTER & SHREWSBURY,	Worcester,	L. Quinsigamond,	2.700	2.700	2.700	2.700	-	-	-	-	-	-	2.700
Total,	.	.	2,867.613	1,989.508	733.919	277.448	892.676	357.186	5,128.842				

	8. — BOSTON & ALBANY.	9. — FITCHBURG.	10. — BOSTON & LOWELL.	11. — BOSTON & MAINE.
<b>CAPITAL STOCK.</b>				
Amount paid in, . . . . .	\$20,000,000 00	\$5,286,600 00	\$5,129,400 00	\$7,000,000 00
Number of stockholders, . . . . .	6,766	3,064	1,451	4,038
Stockholders in Massachusetts, . . . . .	5,900	2,640	1,294	2,403
Amount of stock held in Massachusetts, . . . . .	\$17,598,800 00	\$4,667,900 00	\$4,277,260 00	\$4,855,000 00
<b>DEBT.</b>				
Funded debt, . . . . .	\$10,858,000 00	\$5,140,600 00	\$4,346,400 00	\$4,426,000 00
Unfunded debt, . . . . .	838,572 11	1,857,051 20	1,549,595 22	2,086,861 89
TOTAL GROSS DEBT, . . . . .	11,696,572 11	6,997,651 20	5,895,995 22	6,512,861 89
<b>PERMANENT INVESTMENTS.</b>				
Construction, . . . . .	\$25,450,340 54	\$5,673,540 03	\$7,036,723 54	\$9,620,937 63
Equipment, . . . . .	3,145,400 00	2,680,913 87	1,199,029 41	1,308,180 00
Other property, . . . . .	1,606,672 16	1,371,706 60	1,732,468 63	1,171,226 33
TOTAL PERMANENT INVESTMENTS, . . . . .	30,202,412 70	9,726,160 50	9,968,221 58	12,100,343 96
Cash and cash assets, . . . . .	2,712,661 92	2,968,423 42	2,257,363 45	3,260,067 06
TOTAL PROPERTY AND ASSETS, . . . . .	32,915,074 02	12,694,583 92	12,225,585 03	15,360,411 02
<b>REVENUE FOR THE YEAR.</b>				
From local passengers, . . . . .	\$2,188,745 28	\$803,369 04	\$1,421,216 07	\$3,477,249 59
through passengers, . . . . .	1,105,258 03	268,920 38	404,557 53	563,036 82
express and extra baggage, . . . . .	247,727 83	81,143 94	93,297 39	188,381 24
mails, . . . . .	148,106 74	30,528 19	71,019 34	95,448 66
other sources passenger department, . . . . .				
<i>Total earnings passenger department,</i> . . . . .	3,689,837 88	1,183,961 55	1,990,090 33	4,324,116 31



From local freight, . . . . .	2,189,815 28	741,854 85	1,246,507 36	2,081,281 05
through freight, . . . . .	2,109,267 62	1,336,590 71	1,253,615 08	848,485 02
other sources freight department, . . . . .	—	—	—	—
Total earnings freight department, . . . . .	4,299,082 90	2,078,445 56	2,500,122 44	2,929,766 07
TOTAL TRANSPORTATION EARNINGS, . . . . .	7,988,920 78	3,262,407 11	4,490,212 77	7,263,882 38
From rents for use of road, . . . . .	—	51,000 00	—	22,403 79
all other sources, . . . . .	309,812 61	86,135 37	138,173 77	267,405 13
TOTAL INCOME FROM ALL SOURCES, . . . . .	8,298,733 39	3,399,542 48	4,628,386 54	7,543,691 30
EXPENSES.				
Transportation expenses, . . . . .	\$5,313,473 45	\$2,408,964 65	\$3,184,470 29	\$4,508,052 46
Taxes, . . . . .	496,914 60	150,700 34	170,175 55	259,247 38
TOTAL EXPENSES, . . . . .	5,810,388 05	2,559,664 99	3,354,645 84	4,767,299 84
NET INCOME, DIVIDENDS, ETC.				
Net income, . . . . .	\$2,488,345 34	\$839,877 49	\$1,273,740 70	\$2,776,391 46
Rents, . . . . .	78,000 00	256,480 00	718,568 86	1,786,457 75
Interest accrued, . . . . .	663,420 41	260,763 00	253,084 27	289,933 71
Dividends earned, . . . . .	1,746,924 93	322,634 49	302,087 57	700,000 00
Per cent., . . . . .	8.7	6.1	5.9	10.0
Dividends declared, . . . . .	1,547,804 00	264,330 00	290,133 00 <sup>†</sup>	595,000 00
Per cent., . . . . .	8.0*	5.0	6.0 <sup>†</sup>	8.5
Balance for the year, . . . . .	199,120 93	58,304 49	11,954 57	105,000 00
Surplus last year, . . . . .	16,449 43	352,028 23	474,239 54	1,742,549 13
Surplus Sept. 30, 1886, . . . . .	1,218,501 91 <sup>†</sup>	410,332 72	486,194 11	1,847,549 13

\* On stock other than that held in the treasury of the company (\$1,014,337).

† On \$4,835,500 Capital Stock.

† Includes Improvement Fund of \$1,002,931.55

	8. — BOSTON & ALBANY — COIL.	9. — FITCHBURG — CON.	10. — BOSTON & LOWELL — COIL.	11. — BOSTON & MAINE — COIL.
MILEAGE, TRAFFIC, ETC				
Passenger-train mileage, . . . . .	2,069,738	1,280,868	2,240,303	3,084,970
Freight-train mileage, . . . . .	2,935,251	1,159,645	1,702,119	1,507,212
Total revenue-train mileage, . . . . .	5,004,989	2,440,513	3,942,422	4,592,182
Switching-train mileage, . . . . .	566,273	703,286	648,105	824,075
Other train mileage, . . . . .	123,619	56,307	90,956	181,235
TOTAL TRAIN MILEAGE, . . . . .	5,694,881	3,200,106	4,681,483	5,597,492
Number season-ticket passengers, . . . . .	586,804	297,313	539,003	2,509,157
Number local passengers (including season), . . . . .	8,738,833	3,863,556	6,334,450	16,325,621
Number through passengers,* . . . . .	988,074	266,839	365,580	696,960
Total number of passengers carried, . . . . .	9,726,907	4,130,395	6,700,030	17,022,581
Local passenger mileage, . . . . .	122,646,388	45,862,118	70,282,913	190,847,777
Through passenger mileage,* . . . . .	55,141,051	15,211,669	18,083,625	33,375,514
Total passenger mileage, . . . . .	177,787,439	61,073,787	88,366,538	224,223,291
Tons of local freight carried, . . . . .	1,826,384	781,665	1,230,682	1,869,032
Tons of through freight carried,* . . . . .	1,680,092	1,727,466	1,350,973	884,169
Total tons of freight carried, . . . . .	3,506,476	2,509,131	2,581,655	2,703,201
Local freight mileage, . . . . .	122,415,656	29,276,668	45,060,903	74,820,383
Through freight mileage,* . . . . .	268,048,722	165,836,414	104,773,851	54,305,488
Total freight mileage, . . . . .	390,464,378	195,113,082	149,834,754	129,125,871
Av. rate of fare per mile, local passengers, through passengers,* . . . . .	1.93 cents.	1.73 cents.	2.21 cents.	2.14 cents.
season-ticket passengers, . . . . .	2.00 "	1.76 "	2.23 "	1.69 "
ALL PASSENGERS, . . . . .	.65 "	.66 "	.65 "	.73 "
Av. rate of freight per mile, local freight, through freight,* . . . . .	1.85 "	1.75 "	2.06 "	1.80 "
ALL FREIGHT, . . . . .	1.79 "	2.53 "	2.76 "	2.78 "
	.79 "	.81 "	1.20 "	1.56 "
	1.10 "	1.07 "	1.67 "	2.27 "

Passengers to Boston (including season),	.	.	.	2,944,147	1,513,882	2,385,116	5,496,045
Passengers from Boston (including season),	.	.	.	2,944,546	1,508,861	2,337,886	5,511,934
Season-ticket passengers to and from Boston,	.	.	.	457,917	152,036	469,548	1,589,394
EQUIPMENT.							
Number of locomotives,	.	.	.	245	112	177	238
passenger cars,	.	.	.	219	131	160	368
parlor and sleeping cars,	.	.	.	14	—	11	15
mail, baggage, and express cars,	.	.	.	52	29	80	90
freight cars (basis 8 wheels),	.	.	.	5,562	3,397	3,576	4,203
other cars,	.	.	.	649	160	103	320
GENERAL INFORMATION, ETC.							
Total miles of road operated,	.	.	.	387,420	229,370	717,240	583,650
Same in Massachusetts,	.	.	.	330,790	220,000	137,440	248,770
Average number of persons employed,	.	.	.	5,149	2,327	3,513	4,913

\* To and from other roads.

	12. — BOSTON & PROVIDENCE.	13. — NEW YORK & NEW ENGLAND.	14. — OLD COLONY.	15. — BOSTON, WINTHROP & SHORE.
<b>CAPITAL STOCK.</b>				
Amount paid in, . . . . .	\$4,000,000 00	\$21,900,000 00	\$11,157,200 00	\$277,600 00
Number of stockholders, . . . . .	1,619	1,304*	5,806	51
Stockholders in Massachusetts, . . . . .	1,269	823*	5,448	50
Amount of stock held in Massachusetts, . . . . .	\$3,309,000 00	\$6,424,200 00*	\$10,437,800 00	\$259,600 00
<b>DEBT.</b>				
Funded debt, . . . . .	\$760,000 00	\$16,053,496 38	\$9,607,300 00	\$200,000 00
Unfunded debt, . . . . .	297,808 13	570,909 87	1,218,783 62	6,819 00
TOTAL GROSS DEBT, . . . . .	1,057,808 13	16,624,406 25	10,826,083 62	206,819 00
<b>PERMANENT INVESTMENTS.</b>				
Construction, . . . . .	\$4,688,774 38	\$32,595,858 55	\$18,025,152 76	\$342,918 37
Equipment, . . . . .	207,400 00	3,805,614 58	2,165,759 08	6,500 00
Other property, . . . . .	288,856 50	480,710 40	1,726,500 69	116,100 00
TOTAL PERMANENT INVESTMENTS, . . . . .	5,185,030 88	36,882,293 53	21,917,412 53	465,518 37
Cash and cash assets, . . . . .	363,115 10	971,910 60	1,044,914 81	19,672 73
TOTAL PROPERTY AND ASSETS, . . . . .	5,548,145 98	37,854,204 13	22,962,327 34	485,191 10
<b>REVENUE FOR THE YEAR.</b>				
From local passengers, . . . . .	\$927,869 22	\$921,143 81	\$1,932,765 46	\$11,624 17
through passengers, . . . . .	156,144 31	368,462 39	449,283 35	5,612 40
express and extra baggage, . . . . .	40,661 35	100,451 19	148,643 39	-
mails, . . . . .	14,153 73	46,658 95	43,894 80	-
other sources passenger department, . . . . .	-	-	-	-
Total earnings passenger department, . . . . .	1,138,828 61	1,436,716 34	2,574,587 00	17,236 57





	12. — BOSTON & PROVIDENCE — Con.	13. — NEW YORK & NEW ENGLAND — Con.	14. — OLD COLONY — Con.	15. — BOSTON, WIN- THROP & SHORE — Con.
MILEAGE, TRAFFIC, ETC.				
Passenger-train mileage, . . . . .	745,626	1,238,048	1,840,975	15,947
Freight-train mileage, . . . . .	253,652	1,020,982	725,383	—
Total revenue-train mileage, . . . . .	999,278	2,259,030	2,566,358	15,947
Switching-train mileage, . . . . .	49,154	612,769	738,011	—
Other train mileage, . . . . .	—	125,009	247,455	—
TOTAL TRAIN MILEAGE, . . . . .	1,048,432	2,966,808	3,551,854	15,947
Number season-ticket passengers, . . . . .	561,044	803,560	2,115,670	46,540
Number local passengers (including season), . . . . .	5,877,809	4,582,220	8,106,947	163,954
Number through passengers,* . . . . .	242,097	658,686	961,843	69,069
Total number passengers carried, . . . . .	6,119,906	5,240,906	9,068,790	233,023
Local passenger mileage, . . . . .	51,244,908	47,640,899	112,220,192	100,419
Through passenger mileage,* . . . . .	6,745,791	16,229,571	22,592,972	432,226
Total passenger mileage, . . . . .	57,990,699	63,870,470	134,813,164	532,645
Tons of local freight carried, . . . . .	396,197	538,337	1,146,796	—
Tons of through freight carried,* . . . . .	354,023	1,561,002	717,510	—
Total tons of freight carried, . . . . .	750,220	2,099,339	1,864,306	—
Local freight mileage, . . . . .	10,432,971	20,871,957	34,096,991	—
Through freight mileage,* . . . . .	11,494,520	114,598,376	29,263,267	—
Total freight mileage, . . . . .	21,927,491	135,470,333	63,360,258	—
Average rate of fare per mile, local passengers, through passengers,* . . . . .	1.925 cents.	2.096 cents.	2.00 cents.	3.92 cents.
season-ticket passengers, . . . . .	2.143 "	2.270 "	1.90 "	3.18 "
ALL PASSENGERS, . . . . .	.918 "	.808 "	.50 "	2.26 "
Average rate of freight per mile, local freight, through freight,* . . . . .	1.869 "	2.019 "	1.70 "	2.89 "
ALL FREIGHT, . . . . .	3.432 "	3.510 "	4.20 "	—
	2.300 "	1.340 "	2.13 "	—
	2.838 "	1.670 "	2.93 "	—

Passengers to Boston (including season), . . . . .	2,269,165	1,156,751	2,501,309	110,775
Passengers from Boston (including season), . . . . .	2,321,323	1,142,812	2,528,739	122,248
Season-ticket passengers to and from Boston, . . . . .	416,283	245,318	1,346,458	46,540
EQUIPMENT.				
Number of locomotives, . . . . .	58	147	133	1
passenger cars, . . . . .	158	149	255	3
parlor and sleeping cars, . . . . .	24†	3	12	-
mail, baggage and express cars, . . . . .	25	41	42	-
freight cars (basis 8 wheels), . . . . .	520	3,565	2,331	-
other cars, . . . . .	417	12	12	5
GENERAL INFORMATION, ETC				
Total miles of road operated, . . . . .	67,752	379,76	468,46	8,65
Same in Massachusetts, . . . . .	57,331	109,67	452,27	8,65
Average number of persons employed, . . . . .	994	3,045	3,360	15

\* To and from other roads.

† Line cars 8 per cent. owned.

	16. — CHESHIRE.	17. — CONNECTICUT RIVER.	18. — FALL RIVER, WARREN & PROVIDENCE.	19. — HANOVER BRANCH.
<b>CAPITAL STOCK.</b>				
Amount paid in.	\$2,153,300 00	\$2,370,000 00	\$150,000 00	\$123,950 00
Number of stockholders, . . . . .	452	928	27	78
Stockholders in Massachusetts, . . . . .	336	743	11	76
Amount of stock held in Massachusetts, . . . . .	\$1,645,000 00	\$1,905,600 00	\$103,300 00	\$122,850 00
<b>DEBT.</b>				
Funded debt, . . . . .	\$800,000 00	-	\$300,000 00	\$15,000 00
Unfunded debt, . . . . .	50,999 00	\$762,364 61	2,939 55	795 00
<b>TOTAL GROSS DEBT, . . . . .</b>	<b>850,999 00</b>	<b>762,364 61</b>	<b>302,939 55</b>	<b>15,795 00</b>
<b>PERMANENT INVESTMENTS.</b>				
Construction, . . . . .	\$2,395,268 94	\$2,941,097 06	\$310,747 60	\$194,326 66
Equipment, . . . . .	322,266 32	410,441 55	-	71,312 69
Other property, . . . . .	-	99,610 00	-	2,365 00
<b>TOTAL PERMANENT INVESTMENTS, . . . . .</b>	<b>2,717,535 26</b>	<b>3,451,148 61</b>	<b>310,747 60</b>	<b>268,704 35</b>
Cash and cash assets, . . . . .	382,065 51	639,590 61	3,228 51	11,721 01
<b>TOTAL PROPERTY AND ASSETS, . . . . .</b>	<b>3,099,600 77</b>	<b>4,090,739 22</b>	<b>313,976 11</b>	<b>280,425 36</b>
<b>REVENUE FOR THE YEAR.</b>				
From local passengers, . . . . .	\$41,821 25	\$273,722 48	\$453 78	\$8,728 53
through passengers, . . . . .	116,888 48	110,705 69	23,925 51	16,042 35
express and extra baggage, . . . . .	7,500 00	18,160 67	1,500 00	2,027 99
mails, . . . . .	9,485 44	11,237 80	445 48	265 47
other sources passenger department, . . . . .	7,500 00	-	-	-
<i>Total earnings passenger department,</i> . . . . .	<i>183,195 17</i>	<i>413,826 64</i>	<i>26,324 77</i>	<i>27,064 34</i>

From local freight, . . . . .	29,220 16	152,231 57	46 75	2,625 74
through freight, . . . . .	383,415 43	313,285 57	5,513 87	15,388 23
other sources freight department, . . . . .	—	—	—	—
<i>Total earnings freight department,</i> . . . . .	412,635 59	465,517 14	5,560 62	18,014 17
TOTAL TRANSPORTATION EARNINGS, . . . . .	595,830 76	879,348 78	31,885 39	45,078 51
From rents for use of road, . . . . .	—	—	—	—
all other sources, . . . . .	32,241 69	35,457 61	48 67	118 51
TOTAL INCOME FROM ALL SOURCES, . . . . .	628,072 45	914,801 39	31,934 06	45,197 02
EXPENSES.				
Transportation expenses, . . . . .	\$370,546 08	\$579,913 68	\$19,254 50	\$24,105 59
Taxes, . . . . .	23,087 55	64,674 97	310 86	1,285 58
TOTAL EXPENSES, . . . . .	393,633 63	644,588 65	19,565 36	25,391 17
NET INCOME, DIVIDENDS, ETC.				
Net income, . . . . .	\$234,438 82	\$270,212 74	\$12,368 70	\$19,805 85
Rents, . . . . .	51,727 95	22,760 42	—	—
Interest accrued, . . . . .	48,000 00	27,901 73	12,368 70	937 50
Dividends earned, . . . . .	134,710 87	219,556 59	—	18,868 35
Per cent., . . . . .	6.3	9.3	—	15.2
Dividends declared, . . . . .	105,000 00	189,600 00	—	7,428 00
Per cent., . . . . .	5.0	8.0	—	6.0
Balance for the year, . . . . .	29,710 87	29,950 59*	—	11,440 35
Surplus last year, . . . . .	65,590 90	928,424 02	138,963 44d	129,240 01
Surplus Sept. 30, 1886, . . . . .	95,301 77	958,374 61	138,963 44d	140,680 36

\* Paid dividend Jan. 1, 1886, of \$17,409 from surplus of previous years.

d Deficit.

	16. — CHESHIRE — Con.	17. — CONNECTICUT RIVER — Con.	18. — FALL RIVER, WARREN & PROVIDENCE — Con.	19. — HANOVER BRANCH — Con.
MILEAGE, TRAFFIC, ETC.				
Passenger-train mileage, . . . . .	169,015	333,841	31,300	23,336
Freight-train mileage, . . . . .	404,805	147,280	6,220	5,068
<i>Total revenue-train mileage,</i> . . . . .	573,820	481,121	37,520	28,344
Switching-train mileage, . . . . .	45,543	100,144	—	—
Other train mileage, . . . . .	11,907	18,619	—	—
TOTAL TRAIN MILEAGE, . . . . .	631,270	599,884	37,520	28,344
Number season-ticket passengers, . . . . .	4,506	311,840	—	12,671
Number local passengers (including season), . . . . .	83,291	1,369,365	5,068	42,788
Number through passengers,* . . . . .	89,921	161,843	151,149	81,399
<i>Total number of passengers carried,</i> . . . . .	173,212	1,531,208	156,217	136,858
Local passenger mileage, . . . . .	1,451,536	11,967,103	16,161	256,730
Through passenger mileage,* . . . . .	3,688,181	3,921,045	997,902	488,398
<i>Total passenger mileage,</i> . . . . .	5,139,517	15,888,148	1,014,063	745,128
Tons of local freight carried, . . . . .	44,401	210,280	85	10,391
Tons of through freight carried,* . . . . .	567,497	461,559	14,499	39,382
<i>Total tons of freight carried,</i> . . . . .	611,898	671,839	14,584	49,773
Local freight mileage, . . . . .	1,211,122	3,568,666	340	72,735
Through freight mileage,* . . . . .	32,119,140	12,999,147	111,371	235,293
<i>Total freight mileage,</i> . . . . .	33,330,262	16,567,813	111,711	308,028
Average rate of fare per mile, local passengers, through passengers,* . . . . .	3.50 cents.	2.28 cents.	2.80 cents.	3.40 cents.
season-ticket passengers, . . . . .	3.20 "	2.82 "	2.30 "	2.19 "
ALL PASSENGERS, . . . . .	1.50 "	0.73 "	—	1.04 "
Average rate of freight per mile local freight, through freight,* . . . . .	3.10 "	2.42 "	2.40 cents	2.01 "
ALL FREIGHT, . . . . .	5.00 "	4.27 "	10.50 "	3.61 "
	1.19 "	2.39 "	4.95 "	3.27 "
	1.24 "	2.81 "	4.97 "	3.91 "



## EQUIPMENT.

Number of locomotives, . . . . .	30	43	†	3
passenger cars, . . . . .	25	35	—	4
parlor and sleeping cars, . . . . .	—	—	—	—
mail, baggage and express cars, . . . . .	11	18†	—	2
freight cars (basis 8 wheels), . . . . .	453	486	—	18
other cars, . . . . .	32	47	—	—

## GENERAL INFORMATION, ETC.

Total miles of road operated, . . . . .	64.01	79.850	5,794	8.00
Same in Massachusetts, . . . . .	21.20	55.925	3,662	8.00
Average number of persons employed, . . . . .	330	586	18	29

\* To and from other roads.

† Leases equipment of Old Colony Railroad Company.

‡ Includes 15 combination cars.

	20. — HOUSATONIC OF CONNECTICUT.*	21. — MILFORD & WOONSOCKET.	22. — NANTASKET BEACH.†	23. — NEW HAVEN & NORTHAMPTON.	24. — NEW LONDON NORTHERN.‡
<b>CAPITAL STOCK.</b>					
Amount paid in, . . . . .	-	\$148,600 00	-	\$2,460,000 00	\$1,500,000 00
Number of stockholders, . . . . .	-	30	-	249	334
Stockholders in Massachusetts, . . . . .	-	28	-	40	59
Amount of stock held in Massachusetts, . . . . .	-	\$140,800 00	-	\$138,100 00	\$313,100 00
<b>DEBT.</b>					
Funded debt, . . . . .	-	\$19,000 00	-	\$3,900,000 00	\$1,499,500 00
Unfunded debt, . . . . .	-	54,141 87	-	175,544 55	136,838 09
TOTAL GROSS DEBT, . . . . .	-	73,141 87	-	4,075,544 55	1,636,338 09
<b>PERMANENT INVESTMENTS.</b>					
Construction, . . . . .	-	\$170,744 33	-	\$5,650,038 40	\$2,812,674 36
Equipment, . . . . .	-	34,450 01	-	910,957 03	248,420 44
Other property, . . . . .	-	-	-	100,372 81	243,170 00
TOTAL PERMANENT INVESTMENTS, . . . . .	-	205,194 34	-	6,661,368 24	3,304,264 80
Cash and cash assets, . . . . .	-	10,818 44	-	276,362 48	268,497 71
TOTAL PROPERTY AND ASSETS, . . . . .	-	216,012 78	-	6,937,730 72	3,572,762 51
<b>REVENUE FOR THE YEAR.</b>					
From local passengers, . . . . .	\$58,993 26	\$15,846 96	\$8,963 22	\$155,626 32	\$124,901 04
through passengers, . . . . .	31,765 60	10,111 26	-	63,427 14	91,027 25
express and extra baggage, . . . . .	5,550 00	1,470 00	-	15,674 52	10,250 50
mails, . . . . .	4,857 12	830 25	320 67	9,303 25	11,951 22
other sources passenger department, . . . . .	-	-	-	-	-
Total earnings passenger department, . . . . .	101,165 98	28,258 47	9,283 89	214,031 23	238,130 01

From local freight, through freight,	58,241 52	11,022 83	91 20	307,442 63	168,881 57
other sources freight department,	75,861 38	12,336 87	—	263,054 97	212,826 89
<i>Total earnings freight department,</i>	17,949 44	—	—	17,216 20	—
<i>TOTAL TRANSPORTATION EARNINGS,</i>	152,052 34	23,359 70	91 20	590,713 80	381,708 46
From rents for use of road,	253,218 32	51,618 17	9,375 09	834,745 03	619,838 47
all other sources,	792 58	—	—	—	—
<i>TOTAL INCOME FROM ALL SOURCES,</i>	254,010 90	51,618 17	552 34 9,927 43	7,764 06 842,509 09	9,861 66 629,700 13
EXPENSES.					
Transportation expenses,	\$160,564 27	\$42,094 42	\$9,624 22	\$550,291 14	\$327,635 08
Taxes,	7,465 68	595 35	34 91	20,965 25	23,924 83
<i>TOTAL EXPENSES,</i>	168,029 95	42,689 77	9,659 13	571,256 30	351,559 91
NET INCOME, DIVIDENDS, ETC.					
Net income,	\$85,188 37	\$8,928 40	\$268 30	\$271,252 70	\$213,183 59
Rents,	—	—	—	28,443 09	—
Interest accrued,	—	4,202 55	—	232,425 25	84,847 92
Dividends earned,	—	—	—	10,384 36	128,335 67
Per cent.,	—	—	—	—	—
Dividends declared,	—	—	—	—	90,000 00
Per cent.,	—	—	—	—	6.0
Balance for the year,	—	4,725 85	268 30	10,384 36	38,335 67
Surplus last year,	—	10,454 94 <i>d</i>	11,547 65	391,801 81	398,088 75
Surplus Sept. 30, 1886,	—	5,729 09 <i>d</i>	11,815 95	402,186 17	436,424 42

\* Operating the Berkshire, Stockbridge & Pittsfield and West Stockbridge railroads.

† The details of the operation of the road are taken from the return made by the trustee for the bondholders.

‡ Company's account; being amount derived from rent, etc., \$237,244.70; less general expenses, \$24,061 11.

§ Lessee's Account.

*d* Deficit

	20. — HOUSATONIC OF CONNECTICUT — CON.	21. — MILFORD & WOODSOKET — CON.	22. — NANTASKET BEACH — CON.	23. — NEW HAVEN & NORTHAMPTON — CON.	24. — NEW LONDON NORTHERN — CON.
MILEAGE, TRAFFIC, ETC.					
Passenger-train mileage, . . . . .	94,313	53,396	19,709	398,520	257,228
Freight-train mileage, . . . . .	90,314	15,833	—	225,030	192,031
Total revenue-train mileage, . . . . .	184,627	69,229	19,709	623,550	449,249
Switching-train mileage, . . . . .	—	7,748	—	62,582	114,575
Other train mileage, . . . . .	13,413	1,860	—	13,058	540
TOTAL TRAIN MILEAGE, . . . . .	198,040	78,837	19,709	699,190	564,364
Number season ticket passengers, . . . . .	—	21,241	4,205	—	32,312
Number local passengers (including season), . . . . .	91,997	98,878	85,037	442,046	321,518
Number through passengers,* . . . . .	49,538	46,438	—	96,038	150,182
Total number of passengers carried, . . . . .	141,535	145,316	85,037	538,084	471,700
Local passenger mileage, . . . . .	2,247,503	588,009	589,562	6,693,611	3,997,206
Through passenger mileage,* . . . . .	1,411,804	351,121	—	2,941,517	3,180,369
Total passenger mileage, . . . . .	3,659,307	939,130	589,562	9,635,128	7,177,575
Tons of local freight carried, . . . . .	45,458	15,939	—	268,363	135,895
Tons of through freight carried,* . . . . .	67,864	34,686	—	234,653	361,678
Total tons of freight carried, . . . . .	113,322	50,625	—	503,016	497,573
Local freight mileage, . . . . .	1,705,919	107,043	—	14,131,298	5,034,590
Through freight mileage,* . . . . .	4,741,336	319,332	—	14,932,839	20,265,335
Total freight mileage, . . . . .	6,447,255	426,375	—	29,064,137	25,299,925
Av. rate of fare per mile, local passengers, through passengers,* . . . . .	3.63 cents. 2.25 "	3.23 cents. 2.02 "	1.44 cents. —	2.32 cents. 2.15 "	3.30 cents. 2.86 "
season-ticket passengers, ALL PASSENGERS, . . . . .	— 2.48 cents.	1.24 " 2.71 "	.77 cents. 1.40 "	— 2.27 cents.	.72 " 3.00 "
Av. rate of freight per mile, local freight, through freight,* . . . . .	13.00 " 1.60 "	10.30 " 3.86 "	— —	2.17 " 1.78 "	3.50 " 1.00 "
ALL FREIGHT, . . . . .	2.08 "	5.47 "	—	1.97 "	1.51 "

EQUIPMENT.							
Number of locomotives,	.	-	3	4	4	28	23
passenger cars,	.	-	4	12	12	26	13
parlor and sleeping cars,	.	-	-	-	-	2	-
mail, baggage, and express cars,	.	-	-	-	4	11	14
freight cars (basis 8 wheels),	.	-	3	4	4	134	325
other cars,	.	-	1	5	5	411	7
GENERAL INFORMATION, ETC.							
Total miles of road operated,	.	46,600	19,997		6,933	173,010	121.00
Same in Massachusetts,	.	46,600	19,997		6,933	106,620	54.00
Average number of persons employed,	.	180	45		20	540	484

\* To and from other roads.



	25.—NEW YORK, NEW HAVEN & HARTFORD.	26.—NORWICH & WORCESTER.	27.—PROVIDENCE & WORCESTER.	28.—UNION FREIGHT.	29.—WORCESTER, NASHUA & ROCHESTER.*
CAPITAL STOCK.					
Amount paid in, . . . . .	\$15,500,000 00	\$2,604,400 00	\$2,500,000 00	\$300,000 00	\$3,099,800 00
Number of stockholders, . . . . .	3,586	767	799	3	818
Stockholders in Massachusetts, . . . . .	502	617	409	3	571
Amount of stock held in Massachusetts, . . . . .	\$2,245,900 00	\$2,009,100 00	\$1,415,300 00	\$300,000 00	\$2,596,800 00
DEBT.					
Funded debt, . . . . .	\$2,000,000 00	\$400,000 00	\$1,242,000 00	—	\$1,662,000 00
Unfunded debt, . . . . .	641,687 80	185,641 78	371,667 26	\$114,312 30	35,547 50
TOTAL GROSS DEBT, . . . . .	2,641,687 80	585,641 78	1,613,667 26	114,312 30	1,697,547 50
PERMANENT INVESTMENTS.					
Construction, . . . . .	\$13,285,696 14	\$3,309,556 82	\$3,500,000 00	\$401,069 67	\$4,138,584 99
Equipment, . . . . .	2,479,326 35	179,750 67	575,000 00	17,000 00	415,336 03
Other property, . . . . .	999,714 59	273,107 08	—	13,000 00	—
TOTAL PERMANENT INVESTMENTS, . . . . .	16,764,737 08	3,762,414 57	4,075,000 00	431,069 67	4,553,921 02
Cash and cash assets, . . . . .	4,640,366 11	282,567 30	309,025 78	15,889 18	115,474 58
TOTAL PROPERTY AND ASSETS, . . . . .	21,405,103 19	4,044,981 87	4,384,025 78	446,958 85	4,669,395 60
REVENUE FOR THE YEAR.					
From local passengers, . . . . .	\$2,601,847 35	\$120,084 78	\$407,472 25	—	21,150 21
through passengers, . . . . .	1,443,590 98	72,977 81	61,233 27	—	26,599 08
express and extra baggage, . . . . .	277,166 06	16,574 28	20,826 67	—	2,393 54
mails, . . . . .	174,184 75	5,770 54	3,863 88	—	3,017 65
other sources passenger department, . . . . .	180,259 87	—	—	—	555 01
Total earnings passenger department, . . . . .	4,677,049 01	215,407 41	493,395 07	—	53,715 49

From local freight, through freight,	909,617 85	186,243 51	415,529 73	\$69,477 99	24,405 09
other sources freight department,	1,888,029 30	344,420 62	289,846 65	3,651 83	86,108 53
<i>Total earnings freight department,</i>	17,593 57	-	-	-	4,604 73
<i>TOTAL TRANSPORTATION EARNINGS,</i>	2,795,240 72	530,664 13	705,376 38	73,129 82	115,118 35
From rents for use of road,	7,472,289 73	746,071 54	1,198,772 45	73,129 82	168,833 84
all other sources,	-	-	-	-	187,500 00
<i>TOTAL INCOME FROM ALL SOURCES,</i>	129,656 68	2,587 52	46,939 01	912 00	12,708 52
	7,601,946 41	748,659 06	1,245,711 46	74,041 82	369,042 36
<b>EXPENSES.</b>					
Transportation expenses,	\$4,661,029 88	\$425,881 32	\$830,972 99	\$43,522 08	\$104,429 49
Taxes,	306,946 14	48,401 21	43,688 76	1,792 32	99 10
<i>TOTAL EXPENSES,</i>	4,967,976 02	474,282 53	874,661 75	45,314 40	104,528 59
<b>NET INCOME, DIVIDENDS, ETC.</b>					
Net income,	\$2,633,970 39	\$274,376 53	\$371,049 71	\$28,727 42	\$264,513 77
Rents,	420,730 00	40,475 00	-	-	-
Interest accrued,	80,000 00	24,157 52	85,713 62	7,557 94	82,991 04
Dividends earned,	2,133,240 39	209,744 01	285,336 09	21,169 48	181,522 73
Per cent.,	13.8	8.1	11.4	7.0	-
Dividends declared,	1,550,000 00	207,824 00	150,000 00	21,000 00	91,869 00
Per cent.,	10.0	8.0	6.0	7.0	3.0†
Balance for the year,	583,240 39	1,920 01	135,336 09	169 48	89,653 73
Surplus last year,	2,680,175 00	853,020 08	54,489 34	32,477 07	\$217,605 63d
Surplus Sept. 30, 1886, .	3,263,415 39	854,940 09	270,358 52†	32,646 55	127,951 90d

\* Operated by the company until Jan. 1, 1886, when the road was leased to the Boston & Maine Railroad, and earnings and expenses from that date are in the B. & M. report.

† On \$3,062,300 capital stock.

‡ Deducted from surplus \$29,841.84 for personal injuries, etc.; \$278,000 for "distribution of stock."

d Deficit.

+ Includes improvement fund of \$80,533.09.

	25. — NEW YORK, NEW HAVEN & HARTFORD — Con.	26. — NORWICH & WORCESTER — Con.	27. — PROVIDENCE & WORCESTER — Con.	28. — UNION FREIGHT — Con.	29. — WORCESTER, NASHUA & ROCHESTER — Con.
MILEAGE, TRAFFIC, ETC.					
Passenger-train mileage, . . . . .	2,576,385	176,639	310,194	-	62,339
Freight-train mileage, . . . . .	1,388,161	171,290	567,710	18,364	65,762
Total revenue-train mileage, . . . . .	3,964,546	347,929	887,904	18,364	128,101
Switching-train mileage, . . . . .	827,274	172,040	222,063	-	36,703
Other train mileage, . . . . .	181,423	15,878	46,507	-	2,529
TOTAL TRAIN MILEAGE, . . . . .	4,973,243	535,847	836,474	18,364	167,333
Number season-ticket passengers, . . . . .	2,439,250	43,820	121,368	-	17,992
Number local passengers (including season), . . . . .	7,372,495	460,735	2,685,201	-	71,596
Number through passengers,* . . . . .	894,815	104,720	156,080	-	37,257
Total number of passengers carried, . . . . .	8,267,310	565,455	2,841,281	-	108,853
Local passenger mileage, . . . . .	158,697,345	5,693,612	19,742,613	-	868,520
Through passenger mileage,* . . . . .	67,465,299	2,926,670	2,489,803	-	910,241
Total passenger mileage, . . . . .	226,162,644	8,620,282	22,232,416	-	1,778,761
Tons of local freight carried, . . . . .	744,080	230,019	503,066	227,680	16,523
Tons of through freight carried,* . . . . .	1,632,165	459,730	461,107	11,241	107,618
Total tons of freight carried, . . . . .	2,376,195	689,749	964,173	238,921	124,141
Local freight mileage, . . . . .	25,189,843	8,475,862	13,668,468	313,060	604,458
Through freight mileage,* . . . . .	113,985,209	14,019,407	14,621,956	16,861	3,647,113
Total freight mileage, . . . . .	139,175,052	22,495,269	28,290,424	329,921	4,251,571
Av. rate of fare per mile, local passengers, . . . . .	2.56 cents.	2.50 cents.	2.20 cents.	-	3.16 cents.
through passengers,* . . . . .	2.28 "	2.40 "	2.42 "	-	2.76 "
season-ticket passengers, . . . . .	.57 "	.90 "	.67 "	-	.89 "
ALL PASSENGERS, . . . . .	1.92 "	2.24 "	2.10 "	-	2.73 "
Av. rate of freight per mile, local freight, . . . . .	3.65 "	2.19 "	3.04 "	2.22 cents.	3.54 "
through freight,* . . . . .	1.64 "	2.45 "	1.98 "	2.17 "	2.12 "
ALL FREIGHT, . . . . .	2.00 "	2.36 "	2.49 "	2.21 "	2.31 "

## EQUIPMENT.

Number of locomotives, . . .	132	17	38	4	24
passenger cars, . . .	270	11	46	-	19
parlor and sleeping cars, . . .	37	4†	-	-	3
mail, baggage, and express cars, . . .	95	3	15	-	9
freight cars (basis 8 wheels), . . .	2,720	559	1,153	-	417
other cars, . . .	57	6	14	-	-

## GENERAL INFORMATION, ETC.

Total miles of road operated, . . .	265.36	66.48	50.41	2,431	94.48
Same in Massachusetts, . . .	5.87	18.50	26.01	2,431	39.46
Average number of persons employed, . . .	4,119	434	876	34	400

\* To and from other roads.

† Combination cars.

NARROW GAUGE ROADS.	30.—BOSTON, REVERE BEACH & LYNN.	31.—GRAFTON CEN- TRE.	32.—MARTHA'S VINEYARD.	33.—NANTUCKET.	34.—WORCESTER & SHREWSBURY.
CAPITAL STOCK.					
Amount paid in, . . . . .	\$600,000 00	\$29,830 00	\$40,000 00	\$95,000 00	\$36,825 00
Number of stockholders, . . . .	341	56	24	75	10
Stockholders in Massachusetts, . .	318	56	22	60	10
Amount of stock held in Massachusetts, .	\$540,700 00	\$29,830 00	\$36,400 00	\$83,100 00	\$36,825 00
DEBT.					
Funded debt, . . . . .	\$350,000 00	\$13,000 00	\$40,000 00	\$59,500 00	\$22,000 00
Unfunded debt, . . . . .	58,180 11	8,132 51	2,032 00	13,078 28	3,343 15
TOTAL GROSS DEBT, . . . . .	408,180 11	21,132 51	42,032 00	72,578 28	25,343 15
PERMANENT INVESTMENTS.					
Construction, . . . . .	\$662,577 84	\$39,245 98	\$91,512 09	\$156,904 67	43,958 10
Equipment, . . . . .	178,535 22	5,025 69	14,031 00	14,413 18	33,466 62
Other property, . . . . .	213,129 12	-	3,501 63	-	-
TOTAL PERMANENT INVESTMENTS, . .	1,054,242 18	44,271 67	109,044 72	171,317 85	77,424 72
Cash and cash assets, . . . . .	22,500 71	312 83	596 34	1,415 44	299 88
TOTAL PROPERTY AND ASSETS, . . . .	1,076,742 89	44,584 50	109,641 06	172,733 29	77,724 60
REVENUE FOR THE YEAR.					
From local passengers, . . . . .	\$202,962 20	\$4,458 16	\$4,546 68	\$6,840 85	\$26,970 98
through passengers, . . . . .	5,912 10	-	-	-	-
express and extra baggage, . . . .	-	525 00	21 50	-	-
mails, . . . . .	-	500 00	200 00	-	-
all other sources, . . . . .	13,970 85	1,298 76	358 27	590 55	324 87
TOTAL INCOME FROM ALL SOURCES, . .	222,845 15	6,781 92	5,126 45	7,431 40	27,295 85



EXPENSES.						
Transportation expenses,	.	.	.	\$6,918 09	\$4,646 15	\$5,585 19
Taxes,	.	.	.	-	24 24	121 03
TOTAL EXPENSES,	.	.	.	6,918 09	4,670 39	5,706 22
						\$16,270 15
						145 08
						16,415 23
NET INCOME, DIVIDENDS, ETC.						
Net income,	.	.	.	\$136 17 <i>d</i>	\$456 06	\$1,725 18
Interest accrued,	.	.	.	1,127 50	2,019 39	5,091 09
Dividends declared,	.	.	.	-	-	-
Per cent.,	.	.	.	-	-	-
Balance for the year,	.	.	.	1,263 67 <i>d</i>	1,563 33 <i>d</i>	3,365 91 <i>d</i>
Surplus last year,	.	.	.	5,114 34 <i>d</i>	29,172 39	8,520 92
Surplus Sept. 30, 1886,	.	.	.	6,378 01 <i>d</i>	27,609 06	5,155 01
						9,560 62
						5,995 83
						15,556 45

*d* Deficit.

NARROW GAUGE ROADS.	30.—BOSTON, REVERE BEACH & LYNN — COIL.	31.—GRAFTON CEN- TRE — COIL.	32.—MANTUA'S VINEYARD — COIL.	33.—NANTUCKET — COIL.	34.—WORCESTER & SHRAWSBURY — COIL.
MILEAGE, TRAFFIC, ETC.					
Passenger-train mileage, . . . . .	168,212	14,085	6,424	11,214	34,156
Other train mileage, . . . . .	8,386	—	—	—	—
TOTAL TRAIN MILEAGE, . . . . .	176,598	14,085	6,424	11,214	34,156
Number season-ticket passengers, . . . . .	342,420	—	—	—	—
Number local passengers (including sea- son), . . . . .	1,951,571	39,973	19,647	22,020	337,192
Number through passengers,* . . . . .	69,069	—	—	—	—
Total number of passengers carried, . . . . .	2,020,640	39,973	19,647	22,020	337,192
Local passenger mileage, . . . . .	10,439,201	119,919	141,848	242,220	910,418
Through passenger mileage,* . . . . .	214,113	—	—	—	—
Total passenger mileage, . . . . .	10,653,314	119,919	141,848	242,220	910,418
EQUIPMENT.					
Number of locomotives, . . . . .	7	1	1	2	3
passenger cars, . . . . .	33	1	3	4	7
mail, baggage and express cars, . . . . .	—	—	1	—	—
freight cars (basis 8 wheels), . . . . .	4	—	—	4	—
other cars, . . . . .	24	—	—	—	4
GENERAL INFORMATION, ETC.					
Total miles of road operated, . . . . .	8.80	3.00	8.78	11.16	2.70
Same in Massachusetts, . . . . .	8.80	3.00	8.78	11.16	2.70
Average number of persons employed, . . . . .	105	8	10	15	7

\* To and from other roads.

LEASED ROADS.*	35. — ATLEBOROUGH BRANCH. 1	36. — BERKSHIRE. 2	37. — EASTERN. 3	38. — FALL RIVER. 4	39. — HOLYOKE & WESTFIELD. 5
<b>LIABILITIES.</b>					
Capital stock, . . . . .	\$131,700 00	\$600,000 00	\$ 4,997,600 00	\$200,000 00	\$260,000 00
Funded debt, . . . . .	—	—	13,224,203 17	200,000 00	260,000 00
Unfunded debt, . . . . .	—	245 07	830,834 69	64,787 51	97
Surplus Sept. 30, 1886, . . . . .	836 46	14,253 82	702,067 04	20,842 82d	12,382 00
<b>TOTAL LIABILITIES, . . . . .</b>	<b>132,536 46</b>	<b>614,498 89</b>	<b>19,754,704 90</b>	<b>464,787 51</b>	<b>532,382 97</b>
<b>ASSETS.</b>					
Construction, . . . . .	\$131,416 48	\$600,000 00	\$14,497,655 26	\$143,944 69	\$522,268 89
Other property, . . . . .	1,000 00	6,000 00	4,504,806 25	—	—
Cash and cash assets, . . . . .	119 98	8,498 89	752,243 39	—	10,114 08
<b>TOTAL ASSETS, . . . . .</b>	<b>132,536 46</b>	<b>614,498 89</b>	<b>19,754,704 90</b>	<b>443,944 69</b>	<b>532,382 97</b>
<b>INCOME, EXPENSES, ETC., FOR THE YEAR.</b>					
Total income from all sources, . . . . .	\$9,259 00	\$42,445 15	\$1,294,411 58	\$11,604 31	\$28,443 09
Total expenses, . . . . .	—	9,921 38	9,859 63	276 60	1,118 95
Net income, . . . . .	9,259 00	32,523 77	1,284,551 95	11,327 71	27,324 14
Interest accrued, . . . . .	—	—	850,431 46	10,000 00	17,600 00
Dividends declared, . . . . .	9,219 00	32,497 92	—	—	10,400 00
Per cent., . . . . .	7.0	5.41	—	—	4.0
Balance for the year, . . . . .	40 00	25 85	434,120 49	1,327 71	675 86d

\* Leased to and operated by the <sup>1</sup> Boston and Providence, <sup>2</sup> Housatonic of Connecticut, <sup>3</sup> Boston and Maine, <sup>4</sup> Old Colony, <sup>5</sup> New Haven and Northampton.

LEASED ROADS.*		40. — LOWELL & ANDOVER, 1	41. — MILFORD, FRANKLIN & PROVIDENCE, †	42. — MONADNOCK, 2	43. — NASHUA & LOWELL, 3
LIABILITIES.					
Capital stock, . . . . .	.	\$500,000 00	\$100,000 00	\$205,400 00	\$800,000 00
Funded debt, . . . . .	.	180,000 00	—	52,000 00	300,000 00
Unfunded debt, . . . . .	.	—	43 50	2 00	40,468 50
Surplus Sept 30, 1886, . . . . .	.	110,602 31	—	115,959 33	121,140 69
TOTAL LIABILITIES, . . . . .	.	790,602 31	100,043 50	373,361 33	1,261,609 19
ASSETS.					
Construction, . . . . .	.	\$754,695 94	\$95,061 35	\$367,701 26	\$691,292 07
Other property, . . . . .	.	—	4,685 08	3,090 00	218,242 95
Cash and cash assets, . . . . .	.	35,906 37	297 07	2,570 07	352,074 17
TOTAL ASSETS, . . . . .	.	790,602 31	100,043 50	373,361 33	1,261,609 19
INCOME, EXPENSES, ETC., FOR THE YEAR.					
Total income from all sources, . . . . .	.	\$53,225 53	†	\$12,750 00	\$83,514 79
Total expenses, . . . . .	.	463 89	—	62 00	5,603 39
Net income, . . . . .	.	52,761 64	—	12,688 00	77,911 40
Interest accrued, . . . . .	.	10,800 07	—	2,839 75	17,585 89
Dividends declared, . . . . .	.	35,000 00	—	—	56,000 00
Per cent., . . . . .	.	7.0	—	—	7.0
Balance for the year, . . . . .	.	6,961 64	—	9,848 25	4,325 51

\* Leased to and operated by the <sup>1</sup>Boston & Maine, <sup>2</sup>Cheshire, <sup>3</sup>Boston & Lowell.

† Operated by the Milford and Woonsocket R. R. Co. upon terms not yet agreed upon.

LEASED ROADS.*		44. — NASHUA & ACTON & BOSTON. 1	45. — NEWBURYPORT CITY. 2	46. — NORTH BROOKFIELD. 3	47. — PITTSFIELD & NORTH ADAMS. 4
LIABILITIES.					
Capital stock, . . . . .	.	\$500,000 00	\$97,000 00	\$100,000 00	\$450,000 00
Funded debt, . . . . .	.	500,000 00	25,000 00	—	—
Unfunded debt, . . . . .	.	462,482 90	—	—	—
Surplus Sept. 30, 1886, . . . . .	.	399,194 29 <sup>d</sup>	16,707 81	5,995 24	—
TOTAL LIABILITIES, . . . . .	.	1,462,482 90	138,707 81	105,995 24	450,000 00
ASSETS.					
Construction, . . . . .	.	\$1,057,031 20	\$122,128 33	\$105,456 79	\$138,752 57
Other property, . . . . .	.	—	—	75 00	11,247 43
Cash and cash assets, . . . . .	.	6,257 41	16,579 48	463 45	—
TOTAL ASSETS, . . . . .	.	1,063,288 61	138,707 81	105,995 24	450,000 00
INCOME, EXPENSES, ETC., FOR THE YEAR.					
Total income from all sources, . . . . .	.	\$5,500 00	\$6,865 37	\$2,553 94	\$22,500 00
Total expenses, . . . . .	.	—	1,040 29	279 34	—
Net income, . . . . .	.	5,500 00	5,825 08	2,274 60	22,500 00
Interest accrued, . . . . .	.	30,225 51	1,750 00	—	—
Dividends declared, . . . . .	.	—	3,395 00	2,000 00	22,500 00
Per cent., . . . . .	.	—	3.5	2.0	5.0
Balance for the year, . . . . .	.	24,725 51 <sup>d</sup>	680 08	274 60	—

\* Leased to <sup>1</sup>Concord of N. H., <sup>2</sup>Eastern, and operated by the Boston & Maine, <sup>3</sup> Boston & Albany.

<sup>d</sup> Deficit.



LEASED ROADS.*		48.—RHODE ISLAND & MASSA- CHUSETTS.1	49.—PROVIDENCE, WEBSTER & SPRING- FIELD.2	50.—SPENCER.2	51.—SPRINGFIELD & NEW LONDON.3	52.—STOCKBRIDGE & PITTSFIELD.4
LIABILITIES.						
Capital stock,	.	\$100,000 00	\$110,000 00	\$50,000 00	\$198,145 00	\$448,700 00
Funded debt,	.	—	—	4,500 00	—	—
Unfunded debt,	.	19 00	49,136 02	—	49 50	742 16
Surplus Sept. 30, 1886,	.	22,225 43	2,554 31	8,934 29	238 46 <i>d</i>	2,815 43
TOTAL LIABILITIES,	.	122,244 43	161,690 33	63,434 29	198,194 50	452,257 59
ASSETS.						
Construction,	.	\$112,321 13	\$161,630 33	\$62,854 43	\$187,805 52	\$448,700 00
Other property,	.	—	—	—	9,998 00	2,550 00
Cash and cash assets,	.	9,923 30	60 00	579 86	152 52	1,007 59
TOTAL ASSETS,	.	122,244 43	161,690 33	63,434 29	197,956 04	452,257 59
INCOME, EXPENSES, ETC., FOR THE YEAR.						
Total income from all sources,	.	\$10,000 00	\$4,119 62	\$1,823 24	\$4,135 00	\$31,647 00
Total expenses,	.	—	512 89	815 69	836 52	7,174 48
Net income,	.	10,000 00	3,606 73	1,007 55	3,298 48	24,472 52
Interest accrued,	.	—	1,460 80	270 00	—	67 79
Dividends declared,	.	5,000 00	—	4,500 00	5,593 25	24,362 13
Per cent.,	.	5.0	—	9.0	5.25	5.43
Balance for the year,	.	5,000 00	2,145 93	3,762 45 <i>d</i>	2,294 77 <i>d</i>	42 60

\* These roads are leased to and operated by the <sup>1</sup>, <sup>3</sup> New York & New England, <sup>2</sup> Boston & Albany, <sup>4</sup> Housatonic of Connecticut.

*d* Deficit.

LEASED ROADS.*		53.—STONY BROOK, <sup>1</sup>	54.—VERMONT & MASSACHUSETTS. <sup>2</sup>	55.—WARE RIVER, <sup>3</sup>	56.—WEST AMES- BURY BRANCH. <sup>4</sup>	57.—WEST STOCK- BRIDGE. <sup>5</sup>
<b>LIABILITIES.</b>						
Capital stock,	.	\$300,000 00	\$3,193,000 00	\$750,000 00	\$57,000 00	\$39,600 00
Funded debt,	.	—	1,000,000 00	—	57,000 00	—
Unfunded debt,	.	—	11,813 55	365,163 82	150 00	—
Surplus Sept. 30, 1886,	.	223 93	142,002 28	—	173 22	1,198 47
<b>TOTAL LIABILITIES,</b>	.	300,223 93	4,346,815 83	1,115,163 82	114,323 22	40,798 47
<b>ASSETS.</b>						
Construction,	.	\$276,601 19	\$3,288,328 01	\$1,115,163 82	\$114,000 00	\$39,600 00
Other property,	.	21,492 38	472,507 65	—	—	400 00
Cash and cash assets,	.	2,130 86	585,980 17	—	323 22	798 47
<b>TOTAL ASSETS,</b>	.	300,223 93	4,346,815 83	1,115,163 82	114,323 22	40,798 47
<b>INCOME, EXPENSES, ETC., FOR THE YEAR.</b>						
Total income from all sources,	.	\$20,000 00	\$194,580 00	\$52,500 00	\$5,700 00	\$1,937 58
Total expenses,	.	261 59	3,000 00	—	588 65	322 72
Net income,	.	19,738 41	191,580 00	52,500 00	5,111 35	1,614 86
Interest accrued,	.	—	†	—	3,990 00	—
Dividends declared,	.	19,500 00	191,580 00	52,500 00	1,140 00	1,584 00
Per cent.,	.	6.5	6.0	7.0	2.0	4.0
Balance for the year,	.	238 41	—	—	18 65 <sup>d</sup>	30 86

\* These roads are leased to and operated by the <sup>1</sup> Boston & Lowell, <sup>2</sup> Fitchburg, <sup>3</sup> Boston & Albany, <sup>4</sup> Boston & Maine, <sup>5</sup> Housatonic of Connecticut.

† Interest paid by Fitchburg Railroad Company.

<sup>d</sup> Deficit.

	58. — TROY & GREENFIELD.*	59. — CENTRAL MASSACHUSETTS.†	60. — CHELSEA BEACH.‡	61. — DANVERS.2‡	62. — DORCHESTER & MILTON.3‡	63. — HORN POND BRANCH 4
<b>LIABILITIES.</b>						
Capital stock, . . . . .	-	\$7,254,094 00	\$21,000 00	\$67,500 00	\$73,340 00	\$2,000 00
Funded debt, . . . . .	-	-	-	150,000 00	-	-
Unfunded debt, . . . . .	-	-	17,310 52	26,956 02	58,448 07	-
Surplus Sept. 30, 1886, . . . . .	-	-	-	-	4,584 70	13,238 46
<b>TOTAL LIABILITIES, . . . . .</b>	-	\$7,254,094 00	38,310 52	244,456 02	136,372 77	15,238 46
<b>ASSETS.</b>						
Construction, . . . . .	-	†	\$38,310 52	\$244,456 02	\$136,372 77	\$15,238 46
Other property, . . . . .	-	-	-	-	-	-
Cash and cash assets, . . . . .	-	-	-	-	-	-
<b>TOTAL ASSETS, . . . . .</b>	-	-	38,310 52	244,456 02	136,372 77	15,238 46
<b>INCOME, EXPENSES, ETC., FOR THE YEAR.</b>						
Total income from all sources, . . . . .	\$	†	-	-	-	-
Total expenses, . . . . .	-	-	-	-	-	-
Net income, . . . . .	-	-	-	-	-	-

\* This road is operated by connecting railroads, under contract with the State.

† Road in the hands of the committee of the bondholders. Operated during the year by the Boston & Lowell Railroad, and the earnings and expenses are included in the report of that company.

‡ These roads are virtually owned by the 1 Eastern, and operated by the Boston & Maine, 2 Boston & Maine, 3 Old Colony; and their earnings and expenses are included in the returns of those roads.

§ No returns received at time of going to press.

4 Operated by the Boston & Lowell.

	64. — LANCASTER.*	65. — NEWBURYPORT.†	66. — NEW YORK & BOSTON INLAND.‡	67. — OCEAN TERMINAL.‡
<b>LIABILITIES.</b>				
Capital stock, . . .	—	\$220,340 02	\$127,720 00	\$2,000 00
Funded debt, . . .	—	300,000 00	—	—
Unfunded debt, . . .	—	77,046 31	17,798 12	—
Surplus Sept. 30, 1886, . . .	—	—	—	—
<b>TOTAL LIABILITIES, . . .</b>	—	597,386 33	145,518 12	2,000 00
<b>ASSETS.</b>				
Construction, . . .	—	\$597,386 33	\$145,451 81	\$1,669 28
Other property, . . .	—	—	—	—
Cash and cash assets, . . .	—	—	66 31	330 72
<b>TOTAL ASSETS, . . .</b>	—	597,386 33	145,518 12	2,000 00

\* Road sold under foreclosure of a mortgage.

† This road is virtually owned by the Boston & Maine, and its earnings and expenses are included in the return of that road.

‡ Obtained a certificate of incorporation but has not yet commenced the construction of its road.





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TABULATED COMPARATIVE RESULTS  
OF THE  
CONDITION AND OPERATION  
OF SEVERAL OF THE  
RAILROAD CORPORATIONS OF THE STATE.

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COMPILED FROM REPORTS.

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## TABULATED COMPARATIVE RESULTS OF RAILROAD CORPORATIONS.

RAILROADS.	STOCK, DEBT AND COST PER MILE OF ROAD OWNED.					
	68. — Stock paid in.	69. — Net Debt.	70. — Total Stock and Net Debt.	71. — Construction.	72. — Equipment.	73. — Total Permanent Investments.
Boston & Albany,	\$65,685 76	\$29,505 75	\$95,191 51	\$83,586 25	\$10,330 40	\$99,193 42
Boston & Lowell,	52,292 79	37,094 83	89,387 62	71,737 42	12,223 77	101,623 22
Boston & Maine,	56,451 61	26,232 22	82,683 83	77,588 21	10,549 84	97,583 42
Boston & Providence,	62,743 13	10,896 80	73,639 93	73,549 40	3,253 23	81,339 27
Fitchburg,	39,579 25	30,165 66	69,744 91	42,476 15	20,071 23	72,816 95
New York & New England,	67,225 34	48,047 69	115,273 03	100,057 89	11,682 00	113,215 75
Old Colony,	24,677 14	21,596 27	46,273 39	39,798 53	4,781 88	48,392 42
Eastern,	42,238 00	112,430 65	154,668 65	122,529 20	12,236 55	160,602 28
Average,	\$49,037 71	\$36,604 39	\$85,642 10	\$72,541 01	\$9,845 87	\$89,441 29
Cheshire,	\$40,158 52	\$8,745 49	\$48,904 01	\$44,671 18	\$6,010 19	\$50,681 37
Connecticut River,	42,435 09	2,198 28	44,633 31	52,660 65	7,349 00	61,793 17
New Haven & Northampton,	19,316 84	29,832 60	49,149 44	44,366 22	7,153 18	52,307 58
New York, New Haven & Hartford,	110,163 47	—	110,163 47	92,798 05	17,621 37	119,152 36
Norwich & Worcester,	39,175 69	4,558 89	43,734 58	49,782 74	2,703 83	56,594 68
Providence & Worcester,	49,593 33	25,880 60	75,473 93	69,430 67	11,406 47	80,837 14
Average,	\$55,799 24	\$12,132 65	\$67,931 89	\$62,866 16	\$9,865 78	\$75,710 85
Average 14 Roads,	\$50,620 63	\$30,886 50	\$81,507 13	\$70,283 47	\$9,851 03	\$86,236 72

*Tabulated Comparative Results of Railroad Corporations — Continued.*

RAILROADS.	EARNINGS AND EXPENSES PER MILE ROAD OPERATED.			EARNINGS AND EXP. PER TOTAL REVENUE TRAIN-MILE.		
	74. — Total Transportation Earnings.	75. — Operating Expenses.	76. — Net Earnings.	77. — Total Transportation Earnings.	78. — Operating Expenses.	79. — Net Earnings.
Boston & Albany, . . . . .	\$20,620 83	\$13,715 02	\$6,905 81	\$1,596	\$1,062	\$0,534
Boston & Lowell, . . . . .	6,260 41	4,439 90	1,820 51	1,139	.808	.331
Boston & Maine, . . . . .	12,428 48	7,723 89	4,704 59	1,580	.982	.598
Boston & Providence, . . . . .	25,994 86	18,815 83	7,179 03	1,763	1,276	.487
Fitchburg, . . . . .	14,223 34	10,502 53	3,720 81	1,337	.987	.350
New York & New England, . . . . .	9,740 88	6,581 43	3,159 45	1,638	1,107	.531
Old Colony, . . . . .	9,460 47	6,893 30	2,567 17	1,727	1,258	.469
Average, . . . . .	\$11,604 68	\$7,913 98	\$3,690 70	\$1,509	\$1,029	\$0,480
Cheshire, . . . . .	\$9,308 40	\$5,788 88	\$3,519 52	\$1,038	\$0,645	\$0,393
Connecticut River, . . . . .	11,012 45	7,262 54	3,749 91	1,828	1,206	.622
New Haven & Northampton, . . . . .	4,824 83	3,180 69	1,644 14	1,337	.882	.455
New York, New Haven & Hartford, . . . . .	28,159 06	17,564 93	10,594 13	1,884	1,175	.709
Norwich & Worcester, . . . . .	11,222 50	6,406 15	4,816 34	2,144	1,224	.920
Providence & Worcester, . . . . .	23,780 45	16,484 29	7,296 16	2,112	1,463	.649
Average, . . . . .	\$17,485 32	\$11,061 36	\$6,423 96	\$1,788	\$1,131	\$0,657
Average 13 Roads, . . . . .	\$12,732 51	\$8,517 94	\$4,214 57	\$1,573	\$1,052	\$0,521

Tabulated Comparative Results of Railroad Corporations — Continued.

RAILROADS.	EXPENSES PER TOTAL TRAIN MILE.							
	\$0. — Repairs of Road.*	\$1. — New Rails.	\$2. — Repairs of Bridges.	\$3. — Repairs of Locomotives.	\$4. — Fuel.	\$5. — Oil and Waste.	\$6. — Repairs of Passenger, Baggage and Mail Cars. †	\$7. — Repairs of Freight Cars. †
Boston & Albany, . . . . .	\$0.1341	\$0.0232	\$0.0147	\$0.0829	\$0.1136	\$0.0102	\$0.0981	\$0.1490
Boston & Lowell, . . . . .	.1147	.0101	.0139	.0456	.0955	.0056	.0499	.0802
Boston & Maine, . . . . .	.1033	.0202	.0282	.0504	.0838	.0057	.0837	.1296
Boston & Providence, . . . . .	.1721	.0162	.0886	.0630	.1006	.0157	.0936	.1590
Fitchburg, . . . . .	.0841	.0141	.0126	.0499	.0933	.0039	.0547	.1460
New York & New England, . . . . .	.1127	.0098	.0149	.0733	.1064	.0047	.0566	.1132
Old Colony, . . . . .	.1630	.0210	.0333	.0485	.0745	.0070	.1333	.2102
Average, . . . . .	\$0.1216	\$0.0172	\$0.0225	\$0.0592	\$0.0952	\$0.0068	\$0.0822	\$0.1340
Cheshire, . . . . .	\$0.0600	\$0.0093	\$0.0019	\$0.0533	\$0.1308	\$0.0090	\$0.0647	\$0.0437
Connecticut River, . . . . .	.1871	.0176	.0317	.0402	.1111	.0060	.0560	.1609
New Haven & Northampton, . . . . .	.1268	.0336	.0357	.0616	.0855	.0114	.0780	.1312
New York, New Haven & Hartford, . . . . .	.1345	.0009	.0370	.0447	.0674	.0076	.0958	.2139
Norwich & Worcester, . . . . .	.0826	.0221	.0226	.0505	.0787	.0040	.0528	.1885
Providence & Worcester, . . . . .	.1195	.0103	.0743	.0632	.0797	.0050	.1557	.1058
Average, . . . . .	\$0.1271	\$0.0078	\$0.0366	\$0.0487	\$0.0787	\$0.0074	\$0.0921	\$0.1647
Average 13 Roads, . . . . .	\$0.1229	\$0.0149	\$0.0258	\$0.0567	\$0.0914	\$0.0069	\$0.0846	\$0.1407

\* Including cost of new ties.

† Per passenger-train mile.

‡ Per freight-train mile.

Tabulated Comparative Results of Railroad Corporations — Continued.

RAILROADS.	REPAIRS.			AVERAGES, ETC.			
	88. — Per Locomotive.	89. — Per Passenger, Baggage and Mail Car.	90. — Per Freight Car.	91. — Per Passenger: Average Distance travelled.	92. — Per Ton of Freight; Average Distance carried.	93. — Average No. of Passengers per Train Mile.	94. — Average No. of Tons of Freight per Train Mile.
Boston & Albany, . . . . .	\$1,926 48	\$712 56	\$70 42	18.3	111.3	86	133
Boston & Lowell, . . . . .	1,205 27	318 31	37 12	13.2	58.1	39	88
Boston & Maine, . . . . .	1,211 50	545 84	43 17	13.2	47.8	73	86
Boston & Providence, . . . . .	1,138 10	337 22	43 11	9.5	29.2	78	86
Fitchburg, . . . . .	1,424 12	437 86	47 63	14.8	77.8	48	168
New York & New England, . . . . .	1,494 98	362 77	32 32	12.2	64.5	52	133
Old Colony, . . . . .	1,294 96	794 17	65 03	14.8	83.9	73	87
Average, . . . . .	\$1,434 48	\$714 07	\$53 85	13.9	67.8	64	116
Cheshire, . . . . .	\$1,122 12	\$303 90	\$38 62	29.7	54.4	30	82
Connecticut River, . . . . .	731 23	352 74	44 38	10.4	24.7	48	113
New Haven & Northampton, . . . . .	1,538 15	798 61	54 17	17.9	57.8	24	129
New York, New Haven & Hartford, . . . . .	1,053 46	614 35	106 93	27.3	58.6	88	100
Norwich & Worcester, . . . . .	1,592 56	549 34	57 06	15.3	32.6	49	132
Providence & Worcester, . . . . .	1,394 32	791 13	23 39	7.8	29.3	72	110
Average, . . . . .	\$1,399 38	\$886 76	\$77 63	20.6	46.2	72	103
Average 13 Roads, . . . . .	\$1,427 22	\$752 49	\$58 42	15.2	62.0	66	113



Tabulated Comparative Results of Railroad Corporations — Concluded.

RAILROADS.	95. — Passenger Earnings.	96. — Freight Earnings.	97. — Total Trans- portation Earnings.	98. — Operating Expenses.	99. — Net Earnings.	100. — Per cent Op- erating Expenses to Trans. Earnings.
Boston & Albany,	\$3,689,837 88	\$4,299,082 90	\$7,988,920 78	\$5,313,473 45	\$2,675,447 33	67
Boston & Lowell,	1,990,090 33	2,500,122 44	4,490,212 77	3,184,470 29	1,305,742 48	71
Boston & Maine,	4,324,116 31	2,929,766 07	7,253,882 38	4,508,052 46	2,745,829 92	62
Boston & Providence,	1,138,828 61	622,375 20	1,761,203 81	1,274,810 31	486,393 50	72
Fitchburg,	1,183,961 55	2,078,445 56	3,262,407 11	2,408,964 65	853,442 46	74
New York & New England,	1,436,716 34	2,262,479 18	3,699,195 52	2,499,364 65	1,199,830 87	68
Old Colony,	2,574,587 00	1,857,263 76	4,431,850 76	3,229,234 38	1,202,616 38	74
Cheshire,	\$183,195 17	\$412,635 59	\$595,830 76	\$370,546 08	\$225,284 68	62
Connecticut River,	413,826 64	465,517 14	879,343 78	579,913 68	299,430 10	66
New Haven & Northampton,	244,031 23	590,713 80	834,745 03	550,291 14	284,453 89	66
New York, New Haven & Hartford,	4,677,949 01	2,795,240 72	7,472,289 73	4,661,029 88	2,811,259 85	62
Norwich & Worcester,	215,407 41	530,664 13	746,071 54	425,881 32	320,190 22	57
Providence & Worcester,	493,396 07	705,376 38	1,198,772 45	830,972 99	367,799 46	70

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COMPARISON OF RETURNS  
1885 with 1886,  
AND  
SUMMARY TAKEN FROM RETURNS  
OF  
1873-1881-1882-1883-1884-1885-1886.

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*Summary taken from the Returns of 1885 and 1886.*

	1885.	1886.	Increase.	Decrease.
<i>Roadway.</i>				
Length of road and branches, . .	Miles. 2,859.793	Miles. 2,867.613	Miles. 7.820	Miles. -
in Massachusetts, . . . .	1,981.688	1,989.508	7.820	-
Length of double track, . . . .	977.087	1,011.367	34.280	-
in Massachusetts, . . . .	699.639	733.919	34.280	-
Length of sidings, . . . . .	1,203.142	1,249.862	46.720	-
in Massachusetts, . . . .	855.300	892.676	37.376	-
Total length as single track, . .	5,040.022	5,128.842	88.820	-
in Massachusetts, . . . .	3,536.627	3,616.103	79.476	-
Length of steel rails in track, . .	3,336.476	3,573.910	237.434	-
Length of iron rails in track, . .	1,703.546	1,554.932	-	148.614
Total miles of road operated, . .	3,725.297*	3,778.387	53.090	-
in Massachusetts, . . . .	1,935.779*	1,988.879	53.100	-
Railroad crossings at grade, . .	40	39	-	1
over grade, . . . . .	19	19	-	-
under grade, . . . . .	19	19	-	-
Highway crossings at grade, . .	2,118	2,138	20	-
protected, . . . . .	709	738	29	-
unprotected, . . . . .	1,409	1,400	-	9
<i>Assets.</i>				
Construction, . . . . .	\$177,392,457 66	\$178,013,772 71	\$621,315 05	-
Equipment, . . . . .	22,680,642 08	22,465,263 04	-	\$215,379 04
Lands, . . . . .	2,398,186 20	2,552,865 50	154,679 30	-
Stocks, . . . . .	7,290,133 55	7,509,923 65	219,790 10	-
Bonds, . . . . .	1,456,517 43	1,319,627 07	-	136,890 36
Other property, . . . . .	2,468,026 98	2,392,617 55	-	75,409 43
Total permanent investments, . .	\$213,685,963 90	\$214,254,069 52	\$568,105 62	-
Cash, . . . . .	\$3,097,880 04	\$4,034,413 04	\$936,533 00	-
Materials and supplies, . . . .	3,885,005 73	3,533,332 41	-	\$351,673 32
Sinking fund, . . . . .	2,974,738 83	2,731,089 42	-	243,649 41
Other cash assets, . . . . .	10,118,338 66	12,161,740 03	2,043,401 37	-
Total cash and cash assets, . . .	\$20,075,963 26	\$22,460,574 90	\$2,384,611 64	-
Profit and loss balance (deficit), .	1,336,456 47	1,682,947 64	346,491 17	-
Total assets as per balance-sheet, .	\$235,098,383 63	\$238,397,592 06	\$3,299,208 43	-
<i>Liabilities.</i>				
Capital stock, . . . . .	\$128,551,658 54	\$130,687,969 02	\$2,136,310 48	-
Funded debt, . . . . .	79,714,724 18	80,216,499 55	501,775 37	-
Unfunded debt, . . . . .	14,067,861 12	13,256,572 84	-	\$811,288 28
Surplus, . . . . .	12,764,139 79	14,236,550 65	1,472,410 86	-
Total liabilities as per balance-sheet, . . . . .	\$235,098,383 63	\$238,397,592 06	\$3,299,208 43	-
Total number of stockholders, . .	39,440	38,876	-	564
in Massachusetts, . . . .	28,532	28,478	-	54
Stock held in Massachusetts, . .	\$85,444,154 02	\$84,734,764 02	-	\$709,390 00
Persons employed, . . . . .	30,069	31,188	1,119	-

\* Central Mass. Railroad (43.60 miles) not in operation during the year.

## Summary taken from the Returns of 1885 and 1886.

	1885.	1886.	Increase.	Decrease.
<i>General Exhibit for the Year.</i>				
Total income, . . . . .	\$44,623,350 35	\$49,315,820 50	\$4,692,470 15	-
Total expense, including taxes, . . . . .	29,357,967 36	32,372,939 74	3,014,972 38	-
Net income, . . . . .	15,265,382 99	16,942,880 76	1,677,497 77	-
Rentals, . . . . .	3,146,408 11	3,514,299 44	367,891 33	-
Interest accrued, . . . . .	4,767,095 88	4,810,019 68	42,923 80	-
Dividends earned, . . . . .	7,551,879 00	8,618,561 64	1,266,682 64	-
per cent., . . . . .	5 72	6 70	0.98	-
Dividends declared, . . . . .	6,551,704 15	6,857,506 30	305,802 15	-
per cent., . . . . .	5.10	5.33	0.23	-
Balance for the year, . . . . .	800,174 85	1,761,055 34	960,880 49	-
Surplus Sept. 30, . . . . .	11,427,683 32	12,553,603 01	1,125,919 69	-
<i>Transportation Earnings.</i>				
From local passengers, . . . . .	\$14,454,857 39	\$15,773,723 12	\$1,318,865 73	-
through passengers, . . . . .	5,078,966 71	5,401,602 23	322,635 52	-
express and extra baggage, . . . . .	1,206,175 11	1,280,947 06	74,771 95	-
mails, . . . . .	634,064 90	686,738 42	52,673 52	-
other sources, . . . . .	175,305 16	188,314 88	13,009 72	-
Total passenger department, . . . . .	\$21,549,369 27	\$23,331,325 71	\$1,781,956 44	-
From local freight, . . . . .	\$9,931,155 95	\$10,929,413 10	\$998,257 15	-
through freight, . . . . .	10,192,899 01	11,852,778 57	1,659,879 56	-
other sources, . . . . .	68,916 76	58,171 86	-	\$10,744 90
Total freight department, . . . . .	\$20,192,971 72	\$22,840,363 53	\$2,647,391 81	-
Total transportation earnings, . . . . .	41,742,340 99	46,171,689 24	4,429,348 25	-
Transportation expenses, including taxes, . . . . .	\$29,853,570 77	\$32,892,265 58	\$3,038,694 81	-
<i>Mileage, Traffic, etc.</i>				
Train miles, passenger, . . . . .	16,212,988	17,268,159	1,055,171	-
freight, . . . . .	11,722,667	12,303,808	581,141	-
Total revenue-train miles, . . . . .	27,935,655	29,571,967	1,636,312	-
Miles run by other trains, . . . . .	6,233,344	6,869,076	635,732	-
Total train miles, . . . . .	34,168,999	36,441,043	2,272,044	-
Passengers, season ticket, . . . . .	10,694,750	10,810,716	115,966	-
total number, . . . . .	69,603,700	75,842,581	6,238,881	-
local mileage, . . . . .	796,294,048	865,354,544	69,060,496	-
through mileage, . . . . .	245,334,025	258,793,501	13,459,476	-
total mileage, . . . . .	1,041,628,073	1,124,148,045	82,519,972	-
Freight, total tons carried, . . . . .	20,577,096	22,925,532	2,348,436	-
local mileage, . . . . .	378,992,047	411,259,886	32,267,839	-
through mileage, . . . . .	887,168,408	980,366,552	93,198,144	-
total mileage, . . . . .	1,266,160,455	1,391,626,438	125,465,983	-
<i>Equipment.</i>				
Locomotives, . . . . .	1,416	1,445	29	-
Passenger cars, . . . . .	1,993	2,058	65	-
Mail, baggage and express cars, . . . . .	509	518	9	-
Freight cars (basis 8 wheels), . . . . .	29,957	31,319	1,362	-

## Summary taken from Returns of 1873, 1881, 1882, 1883, 1884, 1885, 1886.

	1873.	1881.	1882.	1883.	1884.	1885.	1886.
Main line in Massachusetts, . .	1,734,955	1,927,944	1,949,460	1,953,258	1,973,708	1,981,688	1,989,508
Double track in Massachusetts, .	436,068	480,877	539,070	487,299	667,889	699,639	733,919
Sidings in Massachusetts, . . .	443,987	739,285	768,195	793,264	832,393	855,300	892,676
Total in Massachusetts, . . .	2,615,010	3,148,106	3,256,725	3,339,803	3,473,990	3,536,627	3,616,103
Amount of capital stock, . . .	\$115,406,883 54	\$122,155,614 12	\$122,976,262 26	\$122,367,572 27	\$127,668,390 27	\$128,551,658 54	\$130,687,969 02
Amount of stock held in Mass., .	63,267,080 00	80,813,841 82	80,602,561 35	81,477,470 02	85,332,908 02	85,444,154 02	84,731,764 02
Number of stockholders, . . .	32,901	36,354	37,284	38,275	39,205	39,440	38,876
Stockholders in Massachusetts, .	23,845	26,485	27,282	27,827	28,513	28,532	28,478
Gross debt, . . . . .	\$45,031,862 59	\$79,340,124 56	\$89,251,046 03	\$91,235,835 97	\$91,752,883 99	\$93,782,585 30	\$93,473,072 39
Net debt, . . . . .	36,606,894 70	64,850,890 76	71,913,806 00	72,933,290 93	74,439,473 75	73,706,622 04	71,012,497 49
Cost of construction, . . . .	\$128,181,510 69	\$159,664,120 10	\$163,724,377 54	\$165,824,300 96	\$176,899,373 56	\$177,392,457 66	\$178,013,772 71
Cost of equipment, . . . . .	17,861,859 47	18,795,188 80	19,410,331 13	20,122,551 63	22,041,997 09	22,680,642 08	22,465,263 04
Cost of other property, . . . .	11,566,450 17	11,404,816 30	15,821,119 87	12,954,424 16	12,940,503 89	13,612,864 16	13,775,033 77
Total permanent investment, .	157,609,820 33	189,864,125 20	198,955,828 54	198,901,276 75	211,881,874 54	213,685,963 90	214,254,069 52
Cash and cash assets, . . . .	8,424,967 89	14,489,233 80	17,337,240 03	18,302,545 01	17,313,410 24	20,075,963 26	22,460,574 90
Total property and assets, . .	166,034,788 22	204,353,359 00	216,293,068 57	217,203,821 79	229,195,284 78	233,761,927 16	236,714,644 42
Total income from all sources, .	\$34,930,527 42	\$37,764,395 83	\$40,846,370 10	\$43,380,387 63	\$43,119,302 70	\$44,623,350 35	\$49,315,820 50
Total expense,* . . . . .	25,412,688 74	27,062,644 23	29,944,167 15	32,479,907 71	32,070,684 51	32,504,375 47	35,887,239 18
Net income, . . . . .	9,517,838 68	10,701,751 60	10,902,202 95	10,900,479 92	11,048,618 19	12,118,974 88	13,428,581 32
Interest accrued, . . . . .	1,846,783 16	3,748,292 55	4,291,222 59	4,756,085 23	4,729,328 56	4,767,095 88	4,810,019 68
Dividends earned, . . . . .	7,671,055 52	6,953,459 05	6,610,980 36	6,144,394 69	6,319,289 63	7,351,879 00	8,618,561 61
Percentage to capital stock, . .	6.65	5.69	5.37	5.02	4.95	5.72	6.70
Dividends declared, . . . . .	7,230,456 02	6,287,866 82	6,271,139 86	6,379,721 10	6,535,054 92	6,551,704 15	6,857,506 30
Per cent., . . . . .	6.34	5.15	5.10	5.21	5.12	5.10	5.33
Balance for the year, . . . .	440,590 50	665,392 23	339,840 50	235,326 41d	215,765 29d	800,174 85	1,761,055 34
Total surplus Sept. 30, . . .	11,109,635 89	2,857,620 32	4,065,760 28	3,600,413 55	9,774,010 52	11,427,683 32	12,553,603 01



Taxes paid, . . . . .	\$1,266,167 99	\$1,568,020 94	\$1,830,437 00	\$1,878,200 01	\$2,024,559 81	\$2,063,204 62	\$2,106,565 25
Mileage, passenger trains, . . . . .	9,212,237†	12,413,290	13,636,169	14,244,658	15,157,425	16,212,988	17,268,159
Mileage, freight trains, . . . . .	9,684,612†	10,398,539	10,598,126	11,382,154	11,282,338	11,722,667	12,303,808
Mileage, other trains, . . . . .	1,164,748	4,393,954	4,818,505	5,524,011	5,864,570	6,233,314	6,869,076
Total train mileage, . . . . .	20,061,617	27,205,783	29,052,800	31,150,823	32,304,333	34,168,999	36,441,043
Total passenger mileage, . . . . .	658,207 465	788,422 761	892,321 207	943,245 658	1,007,136 376	1,041,628 073	1,124,148 045
Through passenger mileage,†	194,647 972	219,680 579	242,970 014	240,784 477	1,245,506 939	245,334 025	238,793 501
Total freight mileage, . . . . .	613,769 300	1,080,802 796	1,130,070 652	1,220,824 418	229,368 472	1,266,160 455	1,391,626 438
Through freight mileage,†	355,433 861	760,209 637	777,203 347	822,282 988	870,891 828	887,168 408	980,366 552
Total passengers carried, . . . . .	42,398,001	49,824,491	55,868,694	61,530,747	66,517,265	69,603,700	75,842,581
Total tons of freight carried, . . . . .	12,431,188	17,971,072	19,061,164	20,292,881	20,273,920	20,577 096	22,925 532
Total season-ticket passengers, . . . . .	6,655,443‡	12,616,987	12,674,117	12,769,120	11,436,929	10,694,750	10,810,716
Number persons employed, . . . . .	20,182	25,490	27,403	29,844	30,590	30,069	31,188
Locomotives, . . . . .	908	1,161	1,222	1,286	1,391	1,416	1,445
Passenger cars, . . . . .	1,243	1,568	1,658	1,790	1,918	1,993	2,058
Mail and baggage cars, . . . . .	305	432	463	482	525	509	518
Freight cars, . . . . .	16,143	24,502	26,382	28,008	29,701	29,957	31,319
Steel rails, . . . . .	630,406	2,134,964	2,466,203	2,774,431	3,121,790	3,336 476	3,573,910
Iron rails, . . . . .	2,957 227	2,304,306	2,109,232	1,943,138	1,836,857	1,703,546	1,554,982

\* Including operating expenses, taxes and rents. † Mileage of switching engines included in these accounts for this year, hereafter included in "Mileage, other trains."

‡ Mileage to and from other roads.

§ In this year computed by a majority of the roads *one* passenger per day, for the other years *two* passengers per day, for time of each ticket.

d Deficit.















